DOCUMENT RESUME

ED 034 370 40 EC 004 784

AUTHOR	Thomas, Alexander
TITLE	Retardation in Intellectual Development of Lower-Class Puerto Rican Children in New York City. Final Report.
INSTITUTION	New York Univ., N.Y. Medical Center.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C. Bureau of Education for the Handicapped.
BUREAU NO	BR-5-0359
PUB DATE	May 69
GRANT	OEG-5-0359-4-11-4
NOTE	64p.
EDRS PRICE	EDRS Price MF-$0.50 HC-$3.30
DESCRIPTORS	*Academic Achievement, Behavior Patterns, Bilingualism, Cultural Pluralism, *Disadvantaged Youth, Educational Needs, Evaluation Methods, *Exceptional Child Research, Family Environment, *Family Influence, Intellectual Development, Intelligence Differences, Parent Attitudes, Parent Child Relationship, Parent Role, *Puerto Ricans, Reading Achievement, Testing, Testing Problems

ABSTRACT

To study the home environment of the Puerto Rican as it relates to the children's academic achievement, 45 working class families were interviewed and these variables were investigated: achievement, classroom behavior inventory in relation to academic achievement, the effect of bilinguality on academic achievement, the influence of examiner testing style on the WISC performance, and the stability and change in IQ of Puerto Rican preschool children as compared to white middle class children. The results indicated that parents were greatly interested in multiple aspects of their children's education, and although these children were generally below the norm in reading ability, the fault seemed to lie not with home environment but with the school. It was found that the behavior inventory of the children with highest reading levels was in the upper half of the scoring range and those with the lowest reading scores were in the lower half. Bilingual children did not appear to have a language development deficiency, but examiner testing style did appear to affect total score. Over a 3-year period, the intellectual level of both Puerto Rican and white middle class children tended to remain fairly stable. (JM)

PA-40
BR-5-0359
OE/BEH

ED034370

FINAL REPORT

Grant No. 5-0359-4-11-4 Proposal No. 2131

Title: Retardation in Intellectual Development of Lower-Class Puerto Rican Children in New York City

Author: Alexander Thomas, M.D.
Professor of Psychiatry, New York University Medical Center
New York, N. Y. 10016

Date Submitted: May 31, 1969

The research reported herein was performed pursuant to a grant from the Office of Education, U. S. Department of Health, Education and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgement in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent Office of Education position or policy.

Bureau for the Education of the Handicapped
Division of Research
Research Laboratories and Demonstration Branch

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

ED 034370

TABLE OF CONTENTS

INTRODUCTION	Page	1
SUMMARY	Page	2
RELATIONSHIP BETWEEN HOME ENVIRONMENT AND ACADEMIC ACHIEVEMENT	Page	8
ACADEMIC ACHIEVEMENT	Page	32
RELATIONSHIP BETWEEN CLASSROOM BEHAVIOR INVENTORY, ACADEMIC ACHIEVEMENT AND HOME ENVIRONMENT SCORE	Page	36
THE ROLE OF BILINGUALITY IN ACADEMIC ACHIEVEMENT	Page	38
INFLUENCE OF EXAMINER "TESTING STYLE" ON THE WISC PERFORMANCE OF PUERTO RICAN CHILDREN	Page	44
STABILITY AND CHANGE IN THE INTELLECTUAL LEVEL OF PUERTO RICAN AND MIDDLE CLASS PRESCHOOL CHILDREN	Page	51
CONCLUSIONS	Page	61

I. INTRODUCTION

In an Interim Final Report, Retardation in Intellectual Development of Lower-Class Puerto Rican Children in New York City (Grant No.Old 32-43-8145-5021 New 5-0359-4111-3 Proposal No.2131), submitted on December 1, 1967, the first three sections (Summary, Introduction, Methods and Analyses) set forth in detail: 1) the objectives of two concurrently conducted studies of two samples of Puerto Rican working class children, who are members of the same families; 2) the social, intellectual and methodological issues which characterize many studies dealing with "disadvantaged" children; 3) differences between the approaches of the aforementioned studies and the investigation currently reported on; and 4) a detailed description of both the methodological procedures employed and findings to that date (December 1, 1967) in a number of research areas.

This includes the development of the research instruments employed throughout the study phases, the related protocols; details of the pretesting and of the investigatory procedures in use in the data analysis (pp.12-30 and Appendices A and B, pp. 43-67).

The present report presents the additional findings and applicable theoretical, methodological and operational procedures not previously reported on.

A demographic analysis of the 72 Puerto Rican families to which the children studied herein belong, appears in the Interim Final Report (p.9). The ages and numbers of children whose temperamental patterns were studied longitudinally (N-98) and their school age siblings (N-150) were also presented (pp.10-11). Utilizing these two sample groups a number of separate data analyses have been carried out, as follows:

1) an analysis of the relationship between the home environment in 45 of the Puerto Rican working class families and the academic achievement of one child in each of the families;

2) the role of bilingualism on the academic achievement of the school age population (N-126);

3) the relationship between academic achievement and selected qualities in a Classroom Behavior Inventory filled out by teachers of the school-age children;

4) a comparison of the stability and change in the intellectual level of the Puerto Rican children in the longitudinal study of temperamental patterning (N-60 at three years of age; N-57 at six years) with the middle class children in a separate study of temperamental patterning (N-116 at three years; N-110 at six years of age)

5) the influence of examiner "testing style" on the WISC performance of the school-age Puerto Rican children (Tester A, N-71; Tester B, N-45).

II. SUMMARY

1. The Home Environment of the Puerto Rican Sample as It Relates to the Children's Academic Achievement:

Forty-five Puerto Rican working class families were available for interviewing on home environment factors deemed significant for their children's academic achievement. An open-ended interviewing procedure was utilized, designed to elicit concrete descriptions of what the parent does in relation to a large number of school-related child-care practices. In addition, parental attitudes regarding educational procedures and activities were queried. Nine content areas with a total of 26 sub areas were selected for quantification; the remaining content areas are now being analyzed qualitatively.

The areas selected for quantification and which will be discussed herein are:

IA. Parental Aspirations for the Child
IB. Parental Perceptions of Life Chances for the Child
II. Parental Knowledge of Educational Progress of the Child
III. Family Press for Academic Achievement
IV. Opportunities for Verbal Development
V. Family Support and Stimulation of Educational Achievement
VI. Parental Attitudes Toward Extra-Familial Socialization of the Child
VII. Parental Attitudes Toward Independence Training
VIII. Parental Level of Task-Orientation

Each sub area was scored on a five point scale. The highest score that could be attained for the nine scales was 45. The range of parental scores is 26-40; the median, 33. The upper quartile scores are from 35 to 40; the lowest quartile from 26 to 30. Considerable homogeneity is found in the overall scores. All of them fall within a 14 point spread in the upper 50% of the total scoring range.

Within the nine content areas, over 50% of the respondents scored in the upper two fifths of the following scales:

1) the level to which the parent would like to see his child go to school (70%, college or beyond)

2) the grades which the parent feels the child should be getting (71%, A's and B's)
3) detailed knowledge of the child's school status (82%)
4) level of parental contact with the child's teachers (59%)
5) the number and type of corrective steps taken when a poor report card is brought home (79%)
6) parental guidance and supervision of homework habits (85%)

7) parental concern about English language facility (57%)
8) parental instruction of the pre-school child in counting, printing and reading (alphabet) in English (62%)
9) parental knowledge and use of extra curricular facilities to assist the children in their school progress (including Headstart and nursery school) (89%)
10) parental acceptance of child's peer relationships outside extended family (75%)
11) positive parental attitudes toward discussion of family issues and decision-making by children in limited areas of daily functioning (59%)
12) positive parental attitudes toward independence training (62%)
13) parental encouragement of task division, performance, and completion by children in the family (85%)

There was much greater variability in parental response in the following areas: 1) occupational goals for the child (centered largely in white collar jobs); 2) expectations (as distinct from desires) of length of education of the child; 3) occupational expectations; 4) quality of parental English; 5) frequency and extent of reading (in English) to the children; 6) variety of reading materials available in the household and used; 7) educational games, toys or lessons available to the child; 8) educational leisure time activities; 8) financial plans for future education; 9) educational radio and TV programs listened to; 10) library usage; 11) stimulating relationships with adults outside the family.

It may be noted that the consistently high scores for the parents occur in those areas where the parents can, as a result of motivation and concern, do something specific to assist the child in his educational achievement. The lower or more variable scoring areas are those over which the parents have little control and which are commonly associated with low socio-economic circumstances (combined in this instance with the discriminatory practices of a dominant, white English-speaking culture): how far the child will actually go in school; the quality of parental English; reading materials available in the home; games, toys, hobbies for the child; leisure time activities, financial plans for education; etc. These Puerto Rican working class parents are concerned with multiple aspects of their children's educational situation: homework supervision, contact with teachers, knowledge of how the child is doing, knowledge of remedial programs, and facilitating the child's participation where necessary. Such involvement differentiates these parents from a number of other working class samples in which parents were found to be apathetic or punitive.

2. Academic Achievement:

Because of the inadequacy of the testing and recording situations in the New York City public school system, it was not possible to obtain reading comprehension scores for a number of children in the school-age sample.

Such scores were available for 36 of the 45 children in the Home Environment Sample. The following was found: 1) four children were above grade level (in relation to national norms); 2) 11 children were between 1 and eleven months below grade level; 3) thirteen children were one to one year, 10 months below grade level; and 4) eight children were two or more years below grade level.

In addition, school records were available for 75 of the 136 siblings. Of these, seven read above grade level, one at grade level, and the remainder below grade level. 86% of this group of children reads below the norm established for their individual schools by the New York City Board of Education in 1965. This finding was in keeping with that noted in the extensive literature on disadvantaged children.

3. The Relationship Between Home Environment and Academic Achievement:

As a whole, child-care practices and educational attitudes are not consistently related to the academic performance of the children on their reading comprehension tests. All of the children whose reading comprehension level was above grade level had parents in the upper quartile of the Home Environment scoring range. However, there were three children between 1 and 11 months below grade level, and three children between 1 year and one year 10 months below grade level whose parents also scored in the upper quartile. One child whose parents scored 35 in Home Environment was 2.9 years above grade level in reading comprehension; another child whose parents similarly scored 35 was 2.0 years below. The child whose parents scored lowest (26) on the Home Environment Scale is .7 years below grade level in reading comprehension, as compared with eight children who are two years or more below grade level.

The level of intellectuality in the home (Scales IV and V) shows some relation to the reading comprehension level, but further analysis is needed.

The findings of the study, as analyzed to date, suggest that the basic causes of the reading deficit found in most of these Puerto Rican children must be sought outside the home. The parents manifest a high degree of interest and involvement in their children's school careers. They are concerned about academic achievement. Yet even those children in the normal range of IQ and higher are reading below grade level.

It would appear that the main source of the reading deficit is not the home but the school. A school system that undertakes to teach 250,000 children from a bi-cultural, bi-lingual background has a special responsibility. It must devise educational procedures that will enable each child to learn up to his own capacity. The individual parents in this sample cannot be considered responsible for such measures.

4. The Relationship Between the Classroom Behavior Inventory and Academic Achievement:

In order to estimate the level of the children's social, emotional and task-oriented behavior in the classroom, a Classroom Behavior Inventory was developed. It consists of 190 descriptive items of 38 behavioral traits (five items for each trait) describing "Specific, concrete, observable" behaviors. (See Interim Final Report, p.14-15). While analysis of the Inventory was still ongoing, as a preliminary analytic measure, a group of 13 selected items was scored and compared with the highest and lowest reading comprehension levels in the sample. It was found that the Mean Inventory scores of the children with the highest reading levels were in the upper half of the scoring range (9.4) while the mean scores of those with the lowest reading comprehension levels were in the lower half of the scoring range (5.5)

5. The Role of Bilinguality in Academic Achievement:

A search of the literature on the relationship between bilinguality and intelligence reveals contradictory results and widely divergent research designs. In recent studies in which variables significant in linguistic research have been controlled, bilinguality has either not affected intellectual outcome, or has been found present in superior performance, with its role undetermined.

This study has been concerned with the effects of bilinguality on the Puerto Rican children's reading deficits. The test used (WISC Vocabulary subtest in English and Spanish) to determine monolinguality and bilinguality proved to be non-differentiating. Scores of the children tested by Tester A are almost equal in the Verbal and Performance subtests. (This is a reversal of findings in the majority of previous studies in which children with a bilingual background attained higher scores in Performance than in Verbal subtests.) This finding suggests that the children are not deficient in language development, although additional testing would have to be done to determine the quality of their language functioning. Recent studies also suggest a relationship between bilinguality and attitudes of subjects toward both cultures in a bi-cultural community.

6. The Influence of Examiner "Testing Style" on the WISC Performance of Puerto Rican Children:

All WISC tests were conducted by two Puerto Rican psychologists, bilingual in Spanish and English. (A third non-Spanish speaking psychologist conducted WAIS tests, but they were not included in this analysis). Differences in the mean scores attained by the children tested by Tester A (M. 97.17, S.D. 11.10) and Tester B (M. 80.47, S.D. 11.44) showed that the scores of children tested by Tester B were considerably lower. All of the mean IQ scores for subjects in A's sample fall within the average range.

However, the means of B's sample fall within or below the dull normal range. In order to check the reliability of the above trends, each examiner retested a randomly selected sample from the other's tested group. It was found that the mean values are very close to those obtained with the original samples and the rank order of the IQ means remained the same for both examiners. In addition, A's retest group had a range of score increments from 4 to 25 points, while B's retest group showed decrements ranging from -3 to -34. All those retested by A gained points on both and Verbal and Performance scale while all those retested by B lost points on both scales.

External factors which might account for these differences were found to be non-differentiating. It was concluded that the differences in the scores attained by children tested by A and B are the result of differences in testing style, as follows: 1) differences in the manner of establishing rapport; 2) differences in responding to the child's mode of coping with test demands: (a) A elicited lengthier responses from the child than did B; (b) the number of "I don't know" responses were more frequent in B's records. A challenged the child's "I don't know" responses and encouraged him to persist within the limits of the standard procedure and thus elicited more satisfactory replies; (c) when the children hesitated with an answer, A was encouraging, B was not; (d) A showed greater flexibility in switching between Spanish and English. It has been concluded that in testing the children with a bilingual background in this sample there were four questions which the tester might pose to himself in order to establish the optimal testing situation: (1) did the child understand the question? (2) when the child hesitates can he be encouraged to persist? (3) is his "I don't know" a factual description of his knowledge or a means of escaping the question? (4) in the case of children from a bicultural and bilingual background, in which language do they conceptualize a particular question? The results found in this study of differences in the mean scores of the two testers illustrates the differences between routine, standard testing procedures and a dynamic approach to the child, resulting in optimal testing.

7. Stability and Change in The Intellectual Level of Puerto Rican and Middle Class Preschool Children

The present study addresses itself to the I.Q. increment or decrement in preschool children from disadvantaged backgrounds. It compares IQ levels at three and at six years of age in Puerto Rican working class and white middle class children.

The findings of this study of IQ change between three and six years in middle class and Puerto Rican working class children may be summarized as follows:

I. Overall intellectual level tends to remain fairly stable during this time period in both groups of children. Small increases of under 5 points were observed in the Puerto Rican as well as in the middle class

groups when they were considered as a whole.

II. When the analysis was restricted to include only those children whose scores at three years of age were between 90 and 110 it was found that in the Puerto Rican group those children whose initial scores were in the normal range showed a modest rise in score which although statistically significant was functionally insignificant. The middle class children with comparable initial scores increased in performance level such that over two thirds of them were functioning in the superior intellectual range at six years.

III. IQ change was also differently related to initial IQ level in the two groups. Among the Puerto Rican children those whose initial scores fell below 90 and those whose initial scores were in the 90 to 110 range had increases in score which were of comparable magnitude. In the middle class group, however, the increase in mean IQ between three and six years was significantly greater for those children whose initial scores were between 90 and 110, than for those children who at three years of age attained IQ's which were 111 or above.

IV. Failure to achieve an IQ score at three years of age because of uncooperativeness had differential significance in the socially defined groups. The middle class children who were untestable at three years attained scores which were undistinguishable from the remainder of the group at the later testing date. In contrast, the mean IQ of the Puerto Rican children who were untestable at the time of the first examination was significantly lower than that attained by the remainder of the group at six years of age.

V. Boys contributed to the rise in IQ between three and six years more heavily than did girls in both of the socially defined groups. Ordinal position bore no relation to IQ level or IQ change in the Puerto Rican children.

The findings of stability in IQ over time in children who derive from both working class and middle class backgrounds are in accord with the results of a number of earlier investigations.

III. RELATIONSHIP BETWEEN HOME ENVIRONMENT AND ACADEMIC ACHIEVEMENT

A. Further Notes on Methodology:

A detailed description of the background factors affecting the development of the parental home environment interview is given in the Interim Final Report (pp. 19-24). While there were 150 school-age siblings of the subjects in the longitudinal study of temperamental patterning, it was not feasible to interview the parents in relation to every sibling. The main deterrant was the fact that the Puerto Rican mothers had been interviewed periodically at a three-month, six-month and yearly intervals for over five years regarding the longitudinal subjects; the mothers had facilitated the two sets of intelligence tests for these same subjects (Stanford Binet Form L at three years of age and again at six years); they had cooperated in locating behavioral disturbances in the school-age siblings supplying data for Psychiatric Symptom Inventories; where behavior problems were noted, the mothers brought the children for clinical psychiatric examinations and when necessary, took the children for treatment; the mothers also participated in follow-up interviews concerning behavior problem children; additional interviews had been undertaken with the mothers to secure detailed demographic data; and finally, the Home Environment protocol took two visits of about three hours each to complete. Thus, undertaking interviews with the parents regarding child care practices and attitudes affecting the child's educational achievement of every school-age sibling was regarded as not feasible.

Accordingly, one school-age sibling per family was randomly selected as the subject of the home-environment interview. While approximately two-thirds of the interview protocol centered on the subject, the remaining third of the interview elicited more general data concerning educational attitudes and specified child care practices toward other children in the family.

While the research referrants providing guide-lines for the construction and usage of the Home Environment protocol were presented in detail in the Interim Final Report (pp. 19-21), the development of a scaling device for this protocol necessitates further discussion.

Wolf (Wolf, Richard, (University of Chicago.) The measurement of environments. Paper given at Institutional Conference on Testing Problems 1964. Unpublished.) describes differences in the ways in which he and his co-workers conceive "environment" from previously used environmental measures by other workers: 1) he views environment not as a single entity (such as socio-economic status) but as made up of a number of sub-environments, with each one operating to influence the development of a specific characteristic; 2) a concentration on those environmental factors which he and his co-workers hypothesized as directly influencing the development of specific characteristics, resulted in investigating what parents <u>do</u> in their interactions with their children rather than what parents <u>are</u> in terms of status level, occupa-

tion, income, etc.; 3) no particular environmental variable was isolated in an attempt to relate it to a particular characteristic, but a variety of processes and conditions in an environment were hypothesized to be related to a given characteristic, and these have been summarized in the description of environment; 4) Wolf and his co-workers systematically attempted to relate measurements of the environment to measurements of the individual. One of the criteria for the validation of Wolf's measurement of environment has been the individual measures of the characteristics under study. A review of the correlations found by Wolf and his co-workers between their measures of environment and children's academic achievement may be found in his own work (unpublished) and in a review of literature of "Parental Influence on Cognitive Development in Early Childhood", (Freeberg, N.E. and D.T. Payne, Annual Progress in Child Psychiatry and Child Development, Chess, Stella and A. Thomas, (eds.) New York, Brunner, Mazel, 1968.)

As indicated previously, Wolf's hypotheses and his operational procedures were used as guidelines for the study of the relationship between the home environment of forty-five working class families and the academic achievement of one child in each family. It was not possible to replicate Wolf's study; it was necessary to adapt it.

B. Analysis of the Home Environment Interviews

The use of the Home Environment Interviewing schedule has yielded extensive, concrete and rich data about the mothers' educational attitudes and the educational problems faced by the subjects. In addition, the open-end form of the protocol permitted the mothers to introduce, spontaneously, much material about the same subjects' siblings. Only the environments deemed to significantly affect the academic performance of the child were selected for scaling. Those selected for scaling purposes are:

IA. PARENTAL ASPIRATIONS
IB. PARENTAL PERCEPTIONS OF LIFE CHANCES FOR THE CHILD
II. PARENTAL KNOWLEDGE OF THE EDUCATIONAL PROGRESS OF THE CHILD
III. FAMILY PRESS FOR ACADEMIC ACHIEVEMENT
IV. OPPORTUNITIES FOR VERBAL DEVELOPMENT
V. FAMILY SUPPORT AND STIMULATION OF EDUCATIONAL ACHIEVEMENT
VI. PARENTAL ATTITUDES TOWARD THE CHILD'S SOCIALIZATION
VII. PARENTAL ATTITUDES TOWARD INDEPENDENCE TRAINING
VIII. PARENTAL LEVEL OF TASK ORIENTATION

As will be seen in Table 5, each of the above environmental factors is composed of several sub-factors, quantitatively analyzed.

An earlier scaling system established during the development of the interviewing protocol provided guidelines for the scales which were ultimately used. Ten completed home environment interviews, randomly selected from the total sample and analyzed by the research supervisor provided the initial contents of the scales and their ranges. A second researcher,

working independently, analyzed an additional ten home environment interviews, selected randomly. Results were compared and revisions made in the initial set of scales. Then each researcher re-scaled his co-worker's set of ten interviews, using the revised scales. The differences found were resolved by further revisions. It is important to note that in the exchange of the two sets of ten interviews, and prior to the second revision of the scales, there was over 90% agreement on the scale values assigned by each of the two researchers working independently. Some minor scaling revision took place as the work proceeded.

In an extremely important area of the data analysis, "The quality of parental English language usage" (Scale IV, 1) the scaling was done first on the basis of the data in the home environment interviews. The assigned values were then checked by the director of field work, and principal tester and interviewer for these projects. This researcher, of Puerto Rican origin, bilingual in English and Spanish, has had close personal and professional contact for the past eight years with the 72 families comprising the sample population. The director of field work independently evaluated the English language usage of each parent. In only four instances were there small shifts (of no more than one scale point) in the values assigned by the researchers assessing the proficiency of the families' English language usage directly from the interview data. The values for each parent were totalled and then divided by two, giving an over-all value of parental English language usage in the home. However, detailed examination of each child's academic record has included awareness of which parent gives most direction and assistance to the child, and to the specific level of that parent's English language usage.

In all but one family, the mother was interviewed. One mother was deceased, so the oldest daughter, who was in charge of the household, became the respondent. The mother was queried, in each content area, about her husband's attitudes and actions in relation to the material under discussion. Parental differences in attitude or action were taken into account in the scoring.

The scales cover nine content areas, as indicated previously (areas IA and IB are considered as discrete entities). For every parent, each question in a given content area was scaled on a five point scale. The sums of the questions in the content area were totalled, then divided by the number of questions in the area. Division was carried out to one decimal point. The result is the score of that scale. After scaling all nine content areas, the scores of each scale were totalled. If the result was .5 or more in excess of a whole number, the next whole number became the score. If the sum was less than .5, the next lower whole number became the score. This total of nine scale scores yielded the parents' <u>Home Environment Score.</u>

Table 5, which details the content areas and the individual scales subsumed under each area, is largely self-explanatory. The basis of the

value judgements for those scales where "Excellent", "Good", "Fair", "Poor", etc. in scales IA, 3; IB, 2; IV 1; and for evaluating the variety of reading material in the home (V,1) and other explanatory notes regarding scale values will be found in Appendix A.

The formulation of the statements to which scale values were assigned has depended entirely upon data found in the interviews. There were no ideal "highs" or "lows" against which parental values were assessed, nor were there any values set relative to what other groups in the population might achieve or consider necessary for adequate child-achievement in school. In other words a high value given to a parent's English language usage might or might not have adequate input value for the child's verbal performance in school. The height of the value is purely relative to other parents in the sample. In this way, there is an opportunity to assess variability in this environmental factor within what might otherwise be regarded as a "homogeneous" working class Puerto Rican population.

C. Sample and Sample Characteristics

The sample for the home environment interviews was drawn from the 72 families described in the Interim Final Report, Retardation in Intellectual Development, pp. 10-13. The disposition of these families in relation to the home environment interviews may be seen in Table 1:

Table 1

HOME ENVIRONMENT SAMPLE
(N-45)

Puerto Rican families with children in longitudinal study of behavioral development		72
Number of families returned to Puerto Rico	7	
Number of families with no children in grades 2-12	19	
Number of families refusing permission for collection of school data	1	
Total	27	27
Remaining families		45

In order to compare the sample of families with other similarly analyzed, and to make available a system whereby socio-economic status could be rank ordered, socio-economic scores for the 45 families participating in the home environment interviews were determined. This was done in accordance with the method outlined by the U.S. Department of Commerce (U.S. Bureau of the Census, Methodology and Scores of Socio-Economic Status, Working Paper #15, Washington, D.C., 1964, p.15). The combined scores of the head of family's income, occupation and education, divided by three, yields the family's socio-economic score. For example, a factory operative is scored 45, completion of high school, 42 and an income of $4,5000 - $4,999, 41. Added and divided by three gives a socio-economic score of 43. A comparison of this combination of factors with the scores below indicates that 70% of the families in this sample fall into a low socio-economic level.

Table 2

SOCIO-ECONOMIC STATUS RATINGS
OF THE SAMPLE FAMILIES
(N-45)

Rating	No. of Families
20-29	9
30-39	16
40-49	7
50-59	11
60-69	1
70-79	0
80-89	1

The age and grade distribution of the children in this sample is presented in Table 3:

Table 3

AGE AND GRADE DISTRIBUTION OF SCHOOL AGE PUERTO RICAN CHILDREN (2nd through 12th grade*) IN STUDY OF THE RELATIONSHIP BETWEEN HOME ENVIRONMENT AND ACADEMIC ACHIEVEMENT
N-45

Age:	Boys N	Girls N	Total N	Grade	Boys N	Girls N	Total N
7/1-8/0	0	1	1	2	3	1	4
8/1-9/0	4	2	6	3	2	2	4
9/1-10/0	3	1	4	4	4	3	7
10/1-11/0	4	6	10	5	4	4	8
11/1-12/0	3	1	4	6	4	2	6
12/1-13/0	5	3	8	7	4	2	6
13/1-14/0	1	0	1	8	1	1	2
14/1-15-0	2	1	3	9	0	1	1
15/1-16/0	0	1	1	10	1	1	2
16/1-17/0	3	1	4	11	1	1	2
17/1-18/0	0	1	1	12	2	1	3
Over 18	1	1	2		-	-	-
Totals	26	19	45		26	19	45

* Age and grades at time that Home Environment interview was conducted. Since there are no reading achievement tests given in first grade, no children from that grade were included

D. Results and Findings

1. Parental Child-Care Practices and Educational Attitudes Selected for Correlation with Academic Achievement

The following pages present the findings in nine areas of the home environment interviews of 45 working class Puerto Rican parents hypothesized to have the most significant relationship to academic achievement of the child (Table 5).

The data was analyzed in accordance with the procedure outlined

under "Further Notes on Methodology." The highest home environment score achieved is 40 (total possible score is 45); the lowest score is 26. The distribution of the scores is as follows :

Table 4

No. of Families (N-45)	Score
1	40
1	38
4	37
2	36
3	35
3	34
5	33
6	32
5	31
4	30
2	29
3	28
5	27
1	26

The median score is 33

IA and IB. PARENTAL ASPIRATIONS AND EXPECTATIONS

The Puerto Rican parents in this sample place a high value on education as a means by which their children can attain better occupations and standards of living than their own.

Two-thirds of the respondents would like to see their children complete a college education (Scale 1A, item 1)*; less than one third indicate satisfaction with only a high school education. But there is a gap between aspiration and expectation; slightly under one-third actually expect their children to complete college, while 55% expect only high school completion, (Scale IB, item 1).

71% of the respondents feel that their children should be getting A's and B's in school (Scale IA, item 3); this is part a generalized desire, and in part a realization that only with good grades will the children succeed moving up to higher occupational levels than their parents.

Three-fourths of the respondents would like to see their children employed in skilled, clerical, office, or technical occupations, or as owners of small businesses. The mothers frequently quote the fathers as urging academic achievements on the children so that "You won't have to

*For scale references, see Table 5

be a taxi driver like me." The type of job regarded as least desirable is "a factory job." Here we note that the occupational goals of the parents for the children (Scale IA, item 2) are in keeping with educational expectations (Scale IB, item 1).

In assessing life changes, 52% of the respondents state either that the child is too young to know what his occupational interests or aptitudes are. It is interesting to compare this finding with that made on Scale V, item 4, which indicates that only 18% of the families have made detailed plans for financing a college education. Financial limitation rather than lack of aspiration or interest appears to be the main obstacle to realizing higher education for their children. A college education has been the goal of some, but not all of the immigrant groups who have come to the United States. This sample of Puerto Rican parents stands out as having comparatively high aspirations.

II. PARENTAL KNOWLEDGE OF THE CHILD"S EDUCATIONAL PROGRESS

This sample of parents appears to be very well-informed regarding their children's academic status. 80% of the mothers score in the two top scale positions (Scale II, item 1) and the range of their information is indicated on the scale. The extent of this information compares favorably with that of a group of middle class parents whose children in the study of behavioral development comprise the sample previously referred to. (NIMH Grant No. 3614, "Primary Reaction Patterns in Childhood").

Over half the parents (Scale II, item 2) maintain frequent contact with the teachers of their children, much of it on a voluntary basis. These findings gain breadth from independent data collected on a demographic questionnaire concerning parental activity in PTA. Another 30% of the respondents maintained less frequent contact with the teachers. Within this group, the mother either had pre-school age siblings and was thus less mobile, or else was ill or pregnant during the collection of home interview data. Where the children are in high school or where the performance of the child is very poor there was less frequent but nonetheless periodic teacher contact.

III. FAMILY PRESS FOR ACADEMIC ACHIEVEMENT

The press for academic achievement also appears comparable to that of the parents of the middle class children studied longitudinally. 79% of the Puerto Rican parents when asked to describe concretely the steps taken when the child brings home a poor report card, spontaneously indicated the actions listed on scale positions 4 and 5 (Scale III, item 1). As in several other areas of the home environment interview, the parents emphasized good grades as a necessary part of the occupational preparation of the child.

In Scale III, item 2, it can be noted that 85% of the parents are

very much involved in the child's homework on a day-to-day basis. With older children, especially those in high school, the parents report more difficulty in day-to-day supervision. Those mothers who feel that either their English language facility or their academic background (or both) are inadequate for homework assistance, reported that aid was given by the father, an older sibling, a neighbor or a friend. In these cases, the mothers assumed responsibility for securing the homework assistance they felt unable to give.

IV. OPPORTUNITIES FOR VERBAL DEVELOPMENT

The factors used to evaluate the quality of English language usage in the home (Scale V, item 1) are presented in Appendix A. It must be emphasized that the home environment interviews did not reveal the characteristics of English language used. The home environment interview provided only functional information: the extent to which English or Spanish was the language used by the husband and/or the wife in communication between them; in which language the parents addressed the children and vice versa; the language used by the children among themselves; and some indication of the language used by the husband on the job; by the parents in communicating with doctors and/or hospital personnel, with housing or other officials. The degree of abstraction or concreteness which characterizes the language used could not be estimated. Only one mother spoke no English; half were rated from poor to fair; two-fifths spoke English well, and four excellently.

The degree to which parents consciously encourage English language usage in the home is limited. A powerful cultural factor characterizes the parents' expressed feelings about the children's linguality; over three-fourths of the respondents expressed a desire for the children to speak Spanish as well as English 1) because "we are Puerto Ricans"; and 2) because bilinguality appears to be a desirable skill. Even those parents who speak English excellently want their children to speak Spanish. Many parents expressed the fear that the children would forget their Spanish, and six parents reported regretfully that their children are unable to speak the language. At the same time, few of the respondents indicated concern that poor facility in English might give their children difficulties in mastering their academic subjects.

The extent to which parents read to the children when they were small, the child's pre-school reading, writing and counting skills (Scale IV, item 2) and frequency of library usage by the children reveal considerable variability in parental response. The range of stories told or read to the children (Scale IV, item 4) would be regarded as quite limited by middle class standards; it consisted largely of familiar fairy tales. Library books are read by the children (Scale V, item 7) only when they are able to read to themselves; there was no instance of a mother reporting having taken out library books to read to pre-school or beginning-school youngsters. The frequency intervals on the scale tend to obscure the extent of reading; there were instances where the children who took books out of the library on only a monthly or bi-monthly basis appeared to read at least as many books as those who visited the library more frequently. This was taken into account in the scoring.

V. FAMILY SUPPORT AND STIMULATION OF EDUCATIONAL ACHIEVEMENT

An examination of the items in Scale V reveals, except for item 5, a high degree of variability in parental response.

While high scores were achieved by a number of Puerto Rican parents in Scale V, items 1,2,3, and 7 - the highest level in these areas does not compare with what would be considered an average score for the middle class parents of the children in the longitudinal study of behavioral development (NIMH Grant No.3614 "Primary Reaction Patterns in Childhood").

The widest range of reading material available reported by the high scoring group consists of one or two English language newspapers, one or two news (Time or Newsweek) or photo-news (Life or Look) magazines; a dictionary; a reference book or a one volume encyclopedia; a book of English language usage and/or a grammar; and generally a book on health care for the family. The group of the high scoring parents report reading some fiction and/or biography. Only a few (N-4) reported purchasing children's books.

Some data related to the child care attitudes and practices of the middle class parents mentioned above have been qualitatively analyzed, and will be referred as a basis of comparison with the Puerto Rican working class parents. (See also Thomas, A., et.al. Temperament and Behavior Disorders, New York, The New York University Press, 1968).

Two respondents reported that their husbands read English language newspapers, periodicals, and some non-fiction. A number of respondents reported reading more widely in Spanish. In each instance, respondents were asked to name the books read most recently, and where possible, a visual inspection of the book in the household was made. Where the parents read more widely or where the children are fond of reading, great pride was expressed, and the interviewer was spontaneously shown the books in the household.

The games and toys available to the children are, for the most part, conventional action toys: baseballs, bats and gloves; tricycles and bicycles; trucks; planes, train sets occasionally; approximately half the children own or have access to a record player; dolls, painting and crayon coloring sets; toy dishes; occasionally doctor's or nurse's play equipment were typically reported for the younger children. Games such as checkers, dominoes, cards, Monopoly, occasionally Parcheesi were reported. Few children had the wide variety of educational toys that are typically played with by the middle class children in the longitudinal sample of behavioral development.

Leisure time activities are quite limited in terms of middle class standards. The most frequent type of activity undertaken by the family members together are visits to relatives, to the playgrounds,

and, in summer, to the beaches. The respondents scoring a 4 or 5 in this scale (Scale V, item 3) reported occasional visits to a zoo or museum; a specific hobby engaged in by the child; reading by the child during his leisure time, or participation in group activity (other than athletic games) at a community center. Where younger siblings are currently or have been in either nursery school or Headstart, the mother exhibited greater awareness of the socializing and educational value of trips to various parts of the city than respondents whose pre-school children stay at home.

As in other environmental areas having to do specifically with school procedures or the parents' relationship with school personnel, these parents are keenly interested in extra-curricular education facilities (Scale V, item 5).

As far as could be determined, the role of television as an educational experience for children of Spanish-speaking families has not been studied. Few children in this sample watch what is regarded by educators and social scientists as "educational programs" (Scale V, item 6). However, it may be hypothesized that TV plays some role in teaching English language usage and vocabulary to children in Spanish-speaking families. Observations regarding this issue may be found in the section Bilingualism and Academic Achievement.

VI. PARENTAL ATTITUDES TOWARD EXTRA-FAMILIAL SOCIALIZATION OF THE CHILD

The traditional family-oriented emphasis of the Puerto Rican families in this sample is evident in Scale VI, items 1 and 2. Few extra-familial adults who might provide intellectual stimulation or a range of interests beyond the home and school room are available to these children. By and large, the children do not belong to community organizations such as the Boy or Girl Scouts, nor do they appear from the respondents' reports to belong to school clubs (music, dramatic, scientific, etc.) where contact and interaction might be established with talented or skilled adults. Six children in this sample were reported to participate in group activity (aside from athletics) in community centers, and while several mothers reported musical abilities in their children and three reported artistic talent, only two of these children expressed these interests in group activity and none appeared to be taking lessons, even in school.

While roughly three-quarters of the children play with their peers, outside the home, this contact begins only after second or third grade. Pre-school and six-and seven-year-old children are kept very close to home and are expected to play with either their siblings or cousins, with whom frequent visits are exchanged. Only a few respondents report an interest in an exchange of social visits between their child and other extra-familial children. In comparing life in Puerto Rico with that in the states, many Puerto Rican parents deplore the unfriendliness and non-

helpfulness of city residents here. But they are simultaneously too anxious about conditions in the ghetto to encourage social relationships of their children with those whom they do not know well. The respondents frequently express their fears of juvenile delinquency and regard the vigilance of the family circle as the best protection against it.

VII. PARENTAL ATTITUDES TOWARD INDEPENDENCE TRAINING

The parents in this sample stress obedience by the children, especially the younger ones. The interviews reveal very little evidence of a concern with the development of initiative or independence in early childhood which would lead to participation of the children in decision-making in the family or to the development of individuality in either thought or action. The data indicates that where discussion of parental directives takes place it is only in relation to the family's functional activities in daily life. In two instances where the children are of high school age, mothers report parental-child disagreement, stating that their sons criticize them for being "old fashioned" and too tradition-bound. There are a number of suggestions of culture conflicts within the family as parental goals and ideals and child care practices clash with ideas of greater freedom, independence and mobility which characterize the dominant youth culture in the states. Most of the family discussions in which the children may differ from their parents center on homework procedures, pronunciation of a given word in English, the method of fixing a record player arm, and similar matters.

In relation to independence training in the pre-school period, the home environment interviews indicate that the Puerto Rican child is trained to service himself (toileting, feeding, bathing, dressing, picking up toys, etc.) at a later age than the children of the middle class parents in the longitudinal study.

In the longitudinal study of behavioral development, the Puerto Rican working class parents were, as indicated previously, interviewed periodically in relation to the younger siblings of this sample. At that time considerable differences were noted between the child care practices and attitudes of the middle class and working class parents. These have been described as follows:

> "Differences between the two groups' child-care practices were also noted. In the middle-class group, the mothers were much concerned with the age at which their children could assume responsibility for and exhibit skill in carrying out activities of daily living and self-care. They often expressed values that indicated that, in their view, the earlier a child was able to feed himself, dress himself, tie his shoes, and so forth, the better. Precocity in task-mastery had high prestige and status value for these families. At points, however, these attitudes of the middle-class mothers conflicted with strongly inculcated attitudes toward permissiveness in feeding and

toileting that they felt desirable. Consequently, toilet-training and weaning from the bottle appeared to be areas in which little pressure for task-mastery was exerted. With these two exceptions, however, the atmosphere was one which favored and was organized to produce regular and systematic improvements in skill.

"The atmosphere in the Puerto Rican homes was quite different, not only were weaning and toilet training unpressured areas but so were a host of other circumstances. In addition to expressing a lack of concern with the achievement of skills in the areas of self-care, many Puerto Rican mothers actively discouraged the efforts of their children to feed or dress themselves. With many children to care for and no household help, these mothers had to take their children with them whenever they went shopping or visiting. They accounted for their failure to encourage their children's proficiency in dressing or feeding by saying, "If I do it for him, I get done faster - I have too many things to do.' They also indicated that they 'liked to keep their babies, babies.'" (Hertzig, M.E. et.al. Class and ethnic differences in the responsiveness of preschool children to cognitive demands. Monographs of the Society for Research in Child Development. Vol. 33, No.1, 1968)

The home environment interviews indicate that by the time the children are five years old, they are expected to care for themselves, and some mothers reported that the children do so before that age. It is our impression that the "baby" stage ends abruptly; self-care and assistance to the mother are required some time between the ages of three and five (earlier if there is a new sibling) and that by school age, the children are equipped with the same self-care skills as the middle class children.

At the other end of the age continuum (12-16) we find the parents less willing to permit independence in the form of traveling alone in the city or working in a supermarket, as a baby-sitter or at odd jobs. This attitude is in part a function of traditional child-care practices which do not set a high value on the child's independence and in part on a fear, based on reality, of the neighborhood in which the families live. The respondents frequently refer to the dangers and temptations to which a child living in East Harlem is exposed.

VIII. PARENTAL LEVEL OF TASK ORIENTATION

Over four-fifths of the respondents score in the two highest scale positions with regard to their task-expectations of the children (Scale VIII, item 1). This finding is in accordance with the high percentage of respondents who expect the children to care for themselves by the age of five. It should be noted that the probes regarding task-orientation

relate only to performance in functional areas in daily living and not to demands for cognitive performance. Ongoing research (an examination of response-styles of the longitudinal study sample at six years of age) should indicate whether the increased demands on the child as he grows older for task performance in functional areas affect his response-style to cognitive demands.

Table 5

HOME ENVIRONMENT SCALES
(N-45)

I.A. PARENTAL ASPIRATIONS FOR CHILD	Scale Position	Percent of Respondents
1. How far would you like to see your child go in school?		
Beyond four years in college	5	4
Complete college	4	66
Complete high school	3	30
Complete grade school	2	0
No thought or preference	1	0
2. What kind of job would you like your child to have when he grows up?*		
Major professional; higher executive; proprietor of large concern	5	13
Business manager in large concern; proprietor of medium business; lesser professional; administrative personnel; small business owner	4	18
Skilled manual employee; clerical and sales worker; technician; owner of little business	3	58
Machine operator; semi-skilled	2	0
Unskilled; no preference; leave choice to child	1	9
3. What grades do you think your child should be getting in school?		
Excellent (A's)	5	27
Very good (A's and B's)	4.5	9
Good (B's)	4	35
Fair plus (B's and C's)	3.5	9
Fair (C's)	3	9
Passing	2	4
No thought or preference; too vague to score	1	7

* Categories from Hollingshead, A.B. Two Factor Index of Social Position, A.B. Hollingshead, New Haven, Conn. 1957.

I.B. PARENTAL PERCEPTIONS OF LIFE CHANCES FOR CHILD	Scale Position	Percent of Respondents
1. How far do you think your child will actually go in school?		
Beyond four years in college	5	4
Complete college	4	30
Complete high school	3	55
Complete grade school	2	4
Don't know	1	7
2. What are the possibilities that your child will do the kind of work you would like him to do?		
Excellent	5	4
Good	4	25
Fair	3	15
Not very good; poor	2	4
Don't know; child will decide; can't tell now	1	52
II. PARENTAL KNOWLEDGE OF EDUCATIONAL PROGRESS OF CHILD		
1. One or both parents' knowledge of child's school status: grades, progress, problems; of child's feelings about and attitudes toward school, particular subjects, teachers; areas in which he is superior, average, poor, failing; awareness of his need for extra curricular assistance with specific subjects.		
Detailed knowledge of above	5	38
Considerable knowledge, but not in complete detail	4	42
Broad awareness and understanding of how child is doing, but no details	3	18
Limited awareness and understanding	2	2
No knowledge or understanding	1	0

(II Cont.)	Scale Position	Percent of Respondents
2. Level of parental contact with teachers.		
Constant voluntary contact; active participation in PTA and other school affairs	5	15
Frequent contact; sometimes initiated by school, sometimes by parent; at least one parent active in PTA and school affairs	4	44
Some contact, usually initiated by school; some PTA activity	3	30
Little contact; always school initiated; no PTA or other school activity	2	9
No contact; no activity	1	2
III. FAMILY PRESS FOR ACADEMIC ACHIEVEMENT		
1. Steps taken by parent when poor report card is (or might be) brought home.		
Parents express disappointment; urge improvement. Actively help with and supervise homework assignment, or seek help from family member, relative, friend. Consult teacher. Punish or deprive of privileges, or threaten to do so. May promise reward. Implement participation of child in extra curricular assistance program where necessary	5	44
Express disappointment, urge improvement. Reprimand. Consult teacher. Query child about homework. Threaten to deprive of privileges or punish. Help, but not consistently, with homework or seek help from other family member or person outside family.	4	35
Express disappointment; urge improvement; threaten to punish or deprive of privileges	3	9
Express disappointment; urge improvement	2	12
No parental response to poor report card	1	0

(III Cont.)	Scale Position	Percent of Respondents
2. Steps taken in relation to homework		
Homework done at regular time, supervised for completion and quality where necessary. Active assistance by at least one parent, older sibling, or outside assistance sought where family member is unable to help. Quizz child to ascertain knowledge and mastery of material. Seeks teacher's advice and guidance where necessary.	5	27
Homework done at regular time. Supervised for completion. Assistance by parent or sibling, or person outside family. Teacher guidance or assistance sought where necessary.	4	58
Parent requires homework to be done. Queries completion; no supervision	3	15
Parent urges child to complete homework; no supervision or specific requirements	2	0
Parent does little or nothing at all regarding homework assignments	1	0
IV. OPPORTUNITIES FOR VERBAL DEVELOPMENT		
1. Quality of parental English language usage		
Excellent	5	9
Good	4	39
Fair (Average)	3	36
Poor	2	14
Do not speak any English	1	2

(IV cont.)	Scale Position	Percent of Respondents
2. Parental encouragement of child's English language usage		
Parents aware of necessity for children to master English language in order to do well in school; parents have taken special classes in English language usage. Consciously speak English so that the children will improve their language usage and comprehension in school. Children knew English before starting school and experienced no initial difficulty in language comprehension or articulation	5	15
Parents speak English but may use either English or Spanish with the children. Concerned about the children's facility in English. Children knew some English before starting school, but may have had initial difficulty in school with it.	4	42
Parents speak both English and Spanish with the children; no emphasis or concern with children's facility in English. Children may or may not have had initial difficulty in school with English	3	36
Parents speak only Spanish with children but accept English or Spanish from children. No emphasis on children's facility in English. Children may or may not have had difficulty with English in school	2	7
Only Spanish (no English) is spoken in the home by both parents and children	1	0

(IV cont.)	Scale Position	Percent of Respondents
3. Parental efforts to teach reading and writing to pre-school child		
Child taught all three before entering school	5	42
Child taught two of these three skills before entering school	4	20
Child taught one of these skills before entering school	3	22
Some attempts made to teach child, but no mastery of these skills by child before entering school	2	4
No effort made to teach these skills in English, although child may have been able to do one or more in Spanish	1	34
4. Frequency of reading or telling stories in English to the pre-school children by parents or other family members		
Every day since they were old enough to listen	5	4
Often	4	22
Sometimes, but not regularly	3	22
Occasionally, very irregularly	2	22
Never (although may do so in Spanish)	1	30

V. FAMILY SUPPORT AND STIMULATION OF EDUCATIONAL ACHIEVEMENT

1. Reading materials in English available and used		
A great variety of reading material in English is available and used	5	13
A considerable variety is available and used	4	22
Some reading materials in English are available and used	3	33
Few reading materials in English available or used	2	30
No reading materials in English available or used	1	2

(V.cont.)	Scale Position	Percent of Respondents
2. Nature of games, toys or lessons available to child		
Many educational games and toys; plays musical instrument; has and plays records	5	11
Some educational toys and games available; may play musical instrument; has and plays records	4	22
Some educational toys and games; no musical instrument; may or may not have records	3	38
Few educational games or toys; no musical instrument; no records	2	27
Few or no toys; none educational; no musical instrument or records	1	2
3. Leisure time activities		
Frequent activities of educational nature undertaken by either parents and children or child himself; child has a hobby	5	20
Many educational activities undertaken by both parents or children or by child himself; child may or may not have a hobby	4	22
Some activities of educational nature; no hobby	3	38
Few activities of educational nature; no hobby	2	18
No activities of educational nature; no hobby	1	2
4. Financial plans for future education		
Detailed plans; savings; property, pension or insurance policy specifically earmarked for this purpose	5	18
Considerable planning; specific details not worked out	4	22
Some broad plans, none implemented	3	18
Little planning	2	2
No plans of any type	1	40

(V. cont.)	Scale Position	Percent of Respondents
5. Family knowledge and usage of extra-curricular facilities		
Parent aware of and interested in Headstart or nursery school program. Children would attend if age-appropriate. Parents informed about extra-curricular school assistance and knowledgeable about details. Children attend or would if necessary	5	60
Parent aware of Headstart or nursery school program and of extra-curricular school assistance. Children attend either Headstart (or nursery school) where age-appropriate, or are enrolled in extra-curricular program assistance (where necessary) but both do not take place	4	29
Parent only vaguely aware of Headstart or nursery school program or of extra-curricular assistance. Children do not attend even if age-appropriate or where study assistance is necessary	3	9
Parents are uninformed about Headstart or nursery school; vaguely aware of extra-curricular study assistance. Children do not attend where necessary	2	2
Parents unaware of either types of program	1	0
6. Children's use of TV and radio		
Many educational programs indicated	5	0
Some educational programs indicated	4	14
A few educational programs indicated	3	24
Only non-educational programs indicated	2	62
No TV or radio	1	0

(V. cont.)	Scale Position	Percent of Respondents
7. Frequency of library usage by child		
Withdraws books from library regularly every week	5	15
Withdraws books from library every other week	4	20
Withdraws books from library once monthly	3	22
Withdraws books from library occasionally (less than once monthly)	2	28
Does not use library at all	1	15
VI. PARENTAL ATTITUDES TOWARD EXTRA FAMILIAL SOCIALIZATION OF CHILD		
1. Relationships with adults outside extended family		
Great deal of activity and stimulation from relationships with one or more adults outside extended family; considerable closeness	5	27
Considerable stimulation and activity from this source	4	7
Some stimulation and activity from this source	3	2
Very little stimulation or activity from this source	2	2
No contact with adults outside extended family	1	62
2. Nature of child's relationships with peers outside extended family; parental attitudes toward these relationships		
Plays frequently with one or more children; parents well-informed about peers; have positive attitude toward extra-familial peer relationships	5	27
Plays occasionally with peers outside extended family; parents somewhat informed about peers; parents have positive attitude toward such peer relationships	4	22
Plays rarely with peers outside extended family; parents express little or no interest in extra-familial peer relationships	3	7
Parents discourage peer relationships outside family	2	4

(VI. cont.)	Scale Position	Percent of Respondents
Parents prohibit peer relationships outside extended family, have negative attitudes toward such peer relationships; no friends outside extended family indicated	1	14

VII. PARENTAL ATTITUDES TOWARD INDEPENDENCE

1. Parental attitudes toward formation of independent judgments and toward decision-making by children

Disagreement, discussion, reasoning, consensus between parents and children take place frequently on a variety of familial and non-familial situations. Children often decision-makers where appropriate	5	4
Disagreement and discussion as above, concerning specific, limited areas of daily functioning	4	55
Disagreement, discussion as above rarely takes place. Child expected to obey parents; little questioning of parental directives permitted	3	28
Above is actively discouraged; reported as not taking place	2	9
Disagreement with parents not tolerated; actively prohibited	1	4

2. Steps taken by parents toward independence training

Children under five expected to dress, bathe, wash, feed and toilet selves; pick up toys and clothing. Parents have positive attitude toward outside employment for older children at appropriate age. Parents encourage the children to learn to travel in the city before age of 14 (when it becomes necessary in order to go to high school)	5	24
Children under five expected to do above. Parents encourage working outside home or travel in city but not both	4	38

(VII. Cont.)	Scale Position	Percent of Respondents
Children under five expected to do above, except for picking up toys and clothing. Parents discourage, but sometimes tolerate travel in city before age of 14 and employment outside the home	3	36
No attempt is made to teach above to children under five; outside employment or travel before 14 is prohibited	2	2
No interest in independence training indicated	1	0

VIII. PARENTAL LEVEL OF TASK-ORIENTATION

1. Parental concern with task-performance and task-completion by children

Parents require homework done at regular time, and supervise completion. Regard division and performance of household tasks by children as necessary part of [illegible]ation and training. Encourage children in use of household appliances when age-appropriate. Older children expected to care for younger ones; to run errands outside home. Task-completion required	5	49
Regular time for homework required and completion supervised. Some task division and performance by children. Use of applicances when age-appropriate. Older children look after younger ones. Task-completion usually required	4	36
Homework completion urged and queried, not supervised. No regular time for homework. Limited task performance, done largely at whim and will of child. Older ones care for younger ones. Task completion not required.	3	11

(VIII. cont.)	Scale Position	Percent of Respondents
Few or no pressures on child regarding homework. No task performance required of children in household. Older ones care for younger ones when older ones wish to. Slight or no interest in task completion	2	4
Parents make few or no demands on children regarding homework, households tasks or task completion	1	0

2. Academic Achievement

The New York City Board of Education enabled project researchers to copy all available school records, where parental permission to do so had been initially granted. Of the 150 school-age siblings, records could be located for only 136 children. Within the home environment sample of 45 school-age children, no achievement test scores were recorded for eight, and parental permission to collect such data was denied for one child. The school records were found to be deficient in providing uniform or complete achievement test scores in the subjects for which such tests are supposed to be given. These records reflected the statement made by the New York City Board of Education indicating that in 1965, 54,000 non-English speaking children did not receive reading tests presumably because of lack of proficiency in the English language. (New York Times, December 23, 1966). The two tests most frequently recorded were selected as the basis of the child's academic status: the Metropolitan Reading Achievement Test Comprehension for public school children and the SRA (Comprehension) for the parochial school children. In many instances more than the usual period had elapsed between the recording and/or giving of various achievement tests to the children in the schools from which records were obtained. It would appear that both inadequate recording of test scores and a high degree of irregularity in frequency and type of achievement testing takes place in ghetto schools.

An examination of Table 6 indicates that of the children whose records were available in the home environment sample, only four were above grade level in reading comprehension scores (in relation to national norms). Eight children were two or more years below grade level, and the remaining children fall in various intervals between these two extremes. All reading level calculations take into account any grade which the child had to repeat. A total of eight children (20% of this sample) have had to repeat one grade.

Table 6

INDIVIDUAL READING COMPREHENSION LEVELS
(In Relation to National Norms)
N-36

Above Grade Level (years/months)
3.6
2.9
2.4
.5

Below Grade Level

1-5 months
.1
.3
.3
.4
.4
.4

6-11 months
.7
.8
.8
.8
.9

1.0-1.11 years
1.0
1.0
1.1
1.1
1.1
1.3
1.4
1.4
1.4
1.4
1.7
1.7
1.9

2.0 and more years
2.0
2.1
2.5
2.6
2.7
2.9
3.0
4.4

3. Relationship Between Home Environment and Academic Achievement

Visual inspection reveals no correlation, in toto, between the home environment scores of the family and the children's reading comprehension scores. Table 7, which gives both the home environment scores (HES) and the socio-economic status (SES) of the family, reveals no relationships between these three factors. Further statistical analysis will be undertaken to determine relationships not apparent to date.

For purposes of further discussion Table 7 below also presents the child's Full Scale, Verbal and Performance scores from the WISC testing. Because of "tester effect" (see discussion, "Influence of Examiner Style on the WISC Performance of Puerto Rican Children" below) letters "A" and "B" have been used to designate the two testers who administered the WISC tests. The discussions on the effect of bilingualism on the children's academic performance and on the role of tester effect on the WISC scores of the sample will also utilize this table.

We found that while all of the parents of the four children who are above grade level in reading comprehension have high scores generally throughout Scales IV and V, that the children of a number of other high-scoring parents are below grade level in reading comprehension. It also appears that the children of the high scoring parents on these two scales do not have as great a reading comprehension deficit as children of parents who score low in level of intellectuality in the home. However, further analysis will have to be undertaken because of the different grade levels of the children. Grade equivalency scores will have to be determined and correlations with parental scores in Scales IV and V examined for statistical significance.

The children's WISC scores were also examined in relation to the home environment scores. On Table 7 it can be noted that within the upper quartile of home environment scores, only three children fell below the normal IQ range. Of these three, two had been tested by Tester B, indicating that a less than optimal score had been secured. (See section on tester effect). Here, too, however, current data analysis is concerned with establishing grade equivalency as the basis for correlations.

Table 7

READING COMPREHENSION LEVELS IN
RELATION TO MULTIPLE FACTORS
N-45

HES (1)	SES (2)	READING LEVEL (3)	FS (4)	V (5)	P (6)	T (7)
40	24	.3 below	117	123	107	A
38	25	2.4 above	109	114	103	A
37	54	1.0 below	112	101	121	B
37	55	1.4 below	112	115	106	A
37	44	.4 below	94	94	96	A
37	59	.4 below	77	74	86	A
36	33	1.0 below	113	114	110	A
36	49	score not recorded	103	100	106	A
35	30	2.9 above	104	118	87	A
35	52	2.0 below	88	96	82	A
35	35	.5 above	83	85	85	B
34	39	score not recorded	97	95	100	A
34	69	.8 below	115	108	120	A
34	47	3.6 above	129	131	121	A
33	39	1.1 below	99	105	93	A
33	27	.1 below	79	81	80	B
33	24	2.1 below	86	92	82	A
33	83	1.7 below	100	103	96	(WAIS)
33	28	.8 below	104	105	101	A
32	47	.1 below	83	81	89	A
32	33	4.4 below	92	84	103	A
32	-	score not recorded	92	87	99	A
32	54	1.4 below	82	79	89	B
32	55	2.6 below	91	85	100	A
32	42	.4 below	70	80	65	B
31	52	.9 below	64	62	74	B
31	37	score not recorded	to be tested			
31	31	2.9 below	74	77	75	A
31	25	1.1 below	91	91	93	A
31	52	1.3 below	77	82	75	B
30	47	1.4 below	81	85	80	A
30	36	1.1 below	91	80	106	B
30	48	3.0 below	68	66	76	B
30	26	score not recorded	68	61	82	A
29	30	score not recorded	to be tested			

(1) - Home Environment Score
(2) - Socio Economic Status
(3) - Reading Level (Comprehension) in Relation to National Norms
(4) - Full Scale WISC Score
(5) - Score on verbal subtests
(6) - Score on performance subtests
(7) - Tester

Table 7 cont.

HES	SES	Reading Level	FS	V	P	T
29	35	1.4 below	76	67	90	B
28	27	1.7 below	91	94	90	A
28	51	.8 below	107	103	111	(WAIS)
28	35	parental permission denied	parental permission denied			
27	37	2.7 below	89	90	90	B
27	31	2.5 below	102	98	107	(WAIS)
27	31	score not recorded	78	72	89	B
27	29	1.9 below	93	84	104	A
27	32	score not recorded	to be tested			
26	52	.7 below	102	100	104	B

The foregoing represents only the highlights of our findings regarding the inter-relationship of academic achievement of the Puerto Rican children and the parental home environment scores. Additional analyses, both quantitative and qualitative, are being undertaken to establish more definitive relationships.

4. <u>The Relationship Between Classroom Behavior Inventory, Academic Achievement and Home Environment Score</u>

In order to estimate the level of the children's social, emotional and task-oriented behavior in the classroom, a Classroom Behavior Inventory I and II was developed (see Appendix B, Interim Final Report, pp. 56-67 for protocol). It is based upon a similar instrument worked out by Schaefer, Aaronson and Burgeon in the Laboratory of Psychology, National Institute of Mental Health, in 1965. A description of the instrument and the scoring procedure used to analyze its contents may be found in the Interim Final Report, pp.14-15.

The relationship between the Classroom Behavior Inventory and the children's reading comprehension scores has not been completely analyzed for the school-age sample (N-136). For this report, however, thirteen categories of the total of 38 in the Inventory have been selected as having potentially significant effect upon academic performance. They are:

Concentration
Academic Seriousness
Academic Interest
Independence
Verbal Expressiveness
Perseverance
Attentiveness
Academic Ability
Achievement Orientation
Conscientiousness
Distractability
Inquisitiveness
Work Fluctuation

The highest score that can be achieved in any category is 15; the lowest, 0. In the following table we have selected the four children whose reading comprehension scores are above their grade level (as determined by

national norms) and the eight children who are 2 years or more below grade level in their reading comprehension scores. (Of these latter eight children, Classroom Behavior Inventories were not received for two children). In addition, the family's Home Environment Score is indicated, and means of all scores are listed (Table 8).

It will be noted that of the four children above grade level in reading comprehension, the mean of the thirteen items in the Classroom Behavior Inventory are in the upper half of the scoring range. The mean of the Home Environment Scores is in the upper quartile. For the six children who are two years or more below grade level in reading comprehension, the mean of the thirteen items in the Classroom Behavior Inventory is in the lower half of the scoring range, and the mean of their family Home Environment Scores is in the second quartile*. The total N's for this table are too small to be able to determine statistical significance.

Further analysis, both quantitative and qualitative will be undertaken to determine more definitive relationships between these three factors.

Table 8

READING COMPREHENSION LEVELS IN RELATION
TO CLASSROOM BEHAVIOR INVENTORIES
AND HOME ENVIRONMENT SCORES

Reading Comprehension Level	Classroom Behavior Inventory Score		Home Environment Score	
	Above Grade Level			
3.6	7.8)		34)	
2.9	9.1)	mean	35)	mean 35.5
2.4	11.6)	9.4	38)	
.5	9.0)		35)	
	Two Years or More Below Grade Level			
2.0	5)		35)	
2.1	7.1)		33)	
2.5	3.9)		27)	
2.6	8.5)	mean	32)	mean
2.7	No CBI)	5.5	27)	31
4.4**	No CBI)		33)	
2.9	7.8)		31)	
3.0	2.8)		30)	

*The Home Environment Scoring range is from 26 to 40. The quartiles may be found in Table

**Chronically ill

5. The Role of Bilinguality in Academic Achievement:

The major question confronting the research team investigating intellectual retardation in this sample of Puerto Rican elementary and high school students has been: what role, if any, does bilinguality play in the scores of the reading comprehension tests taken by these children? Behind this major question lay a number of sub-questions: 1) do the bilingual students in this sample who are reading below grade level reveal a deficiency in language development? If so, of what kind(s)? 2) if no deficiency in language development is observed, do they reveal deficiences in either Spanish or English functioning or both? Of what kind(s)? 3) If no deficiences in either language development or functioning are found, are there any social and/or emotional implications of bilinguality which would create problems for these subjects and thus result in reading deficits. Further analysis and additional testing will have to be undertaken in order to provide definitive answers to these questions.

Because of the complexity of linguistic research, a rigorous search of the literature on the relationship between bilinguality and intellectual functioning was undertaken. Recent developments in this research appears to reverse the dominant findings in such studies done over a period of almost forty years. Thus, some discussion of the issues appears to be appropriate.

Darcy, in her review of the literature on the effects of bilingualism upon the measurement of intelligence (1953) indicates that "The general trend in the literature relating to the effects of bilingualisn upon the measurement of intelligence has been toward the conclusion that bilingualists suffer from a language handicap when measured by verbal tests of intelligence." (Darcy, Natalie. Bilingualism and The Measurement of Intelligence: review of a decade of research. Journal of Genetic Psychology, 103, 1963, p.26) In her own investigation, Darcy found the preschool bilingual subjects made lower scores than monolingual subjects on the Stanford Binet Scale and significantly higher scores than the monoglots on the Atkins Object-Fitting Test. Her own results, together with previous study findings led her to conclude "... the general findings have been that bilinguists are penalized when their intelligence is measured on verbal tests of intelligence but that there is no indication of the inferiority if bilingual subjects when their performance is tested." (ibid.p.28).

Landreth makes the following observations on bilinguality and intelligence (Landreth, Catherine. Early Childhood: Behavior and Learning. New York, Alfred A. Knopf, 1967, p.194):

> "A comparison was made of the performance on a spoken vocabulary test of bilingual Chinese children (aged 37-77 months) of superior socio-economic status in Hawaii and monolingual children in the United States. (Smith, 1949). It was found that in either language the bilingual group was below the average of monolinguals

of the same age. When the bilinguals' vocabularies in Chinese and English were added together, two fifths of the children exceeded the norms for monolinguals, but when the words of duplicate meaning were subtracted only one sixth of them did.

"The investigator suggests on the basis of this evidence that only the superior bilingual child is capable of attaining the vocabulary norms of monolinguals. She further adds that a single name for each of a larger number of concepts contributes more to a young child's understanding and ability to communicate than two names each of a smaller number of concepts.

"While it is clear that young children whose parents speak a different language from that spoken in their nursery school or kindergarten have no choice in the matter of coping with two languages, it is equally clear that their bilingualism should be taken into consideration in evaluating their mental test performance and in developing prereading experiences for them. Thoughtful consideration should also be given to the social distinctions that may be formed in a child's mind when his school and home teaching are imparted in different tongues and when the language he learns is not his mother tongue. Viewed from this standpoint, the social circumstances associated with bilingualism are probably more significant factors in a child's intellectual and social development than the fact that he is learning two names for each concept" (underlining ours).

Peal and Lambert (Peal, Elizabeth and Wallace E. Lambert. The relation of bilingualism to intelligence. Psychological Monographs: General and Applied. #546, 1962), in their review of the literature on bilingualism and intellectual achievement, confirm Darcy's findings in relation to previous studies ("a large proportion of investigators have concluded from their studies that bilingualism has a detrimental effect on intellectual functioning....p.1). These authors, however, present research results which reverse the findings of these earlier studies. One of the problems noted by both Darcy and Peal and Lambert in the previous studies was the failure to control variables considered significantly related to linguistic performance: socio-economic class, sex, degree of bilinguality, age and the actual tests involved. Also, Peal and Lambert introduced two research factors which had not been present in other examinations of bilinguality and intellectual achievement: (1)"...necessity of using intelligence tests constructed and standardized on a population similar to the one being tested, especially with regard to language. A translation of one test to another, without standardization, might bias the results for or against one group." (ibid.p.1). (2) measurements of attitudes toward the other culture in the French Canadian community: the English. They based

their inclusion of these attitudinal measurements on the following factors "... a bilingual person belongs to two different communities and possesses two personalities which may be in conflict if the two language communities are in social conflict... Changes in a bilingual's attitude toward a language community may account for the variation in his efficiency in the use of that language that could even effect his performance on intelligence tests. Studies of Lambert, Hodgson, Gardner and Fillenbaum (1960) and Ainsfeld, Bogo and Lambert (1961) suggest that certain community-wide stereotypes toward speakers of a particular language may have a negative influence on a bilingual who uses that language." (ibid. p.7). Peal and Lambert posit the theory that a favorable attitude toward both his own language and that of the second community is almost requisite for true bilingualism. "The fact that an individual becomes bilingual in a bicultural community may be attributable to a favorable disposition toward both linguistic communities" (ibid. p.7).

Peal and Lambert, like Anastasi (Anastasi, Anne and de Jesus Cruz. Language development and nonverbal IQ of Puerto Rican preschool children in New York City. Journal of Abnormal and Social Psychology. 48, 1953.) indicate that "...it is necessary in any consideration of the influence of bilingualism to distinguish between two types of bilinguals for whom the effects may differ -- the pseudo-bilingual and the genuine bilingual. The pseudo-bilingual knows one language much better than the other and does not use the second language in communication. The true bilingual masters both at an early age and has facility with both as a means of communication. The pseudo-bilingual is often the real problem, since very often he fails to master either language, while the bilingual, by definition, has mastered both" (op.cit. p.6). Anastasi refers to a similar phenomenon as "linguistic bifurcation," (op.cit.p.1)

In their study of two groups of monolingual and bilingual ten year old children from six middle class Montreal French schools, Peal and Lambert found that:

1) the bilinguals performed significantly better than the monolinguals on both verbal and non-verbal intelligence tests
2) the bilinguals have a language asset
3) the bilinguals are more facile at concept formation
4) the bilinguals have greater mental flexibility

Factor analysis indicated that the structures of intellect for the two groups differ. It was found that the bilinguals have a more diversified set of mental abilities than the monolinguals. The authors note: "it is not possible to state from the present study whether the more intelligent child became bilingual or whether the bilingualism aided his intellectual development but there is no question about the fact that he is superior intellectually... Because of superior intelligence, these bilingual children are also further in school...and they achieve significantly better than

their classmates in English study, as would be expected, and in school work in general. This superior achievement in school seems to be dependent upon verbal facility" (op.cit. p.21). The authors go on to point out that the bilinguals had a much more favorable attitude toward the English; the monolinguals were more favorable to the French. The authors also conclude that "the results of this study indicate the value of shifting the emphasis from looking for favorable or unfavorable effects of bilingualism on intelligence to an inquiry into the nature of these effects" (ibid. p.21).

The research undertaken to determine the role of bilingualism in Puerto Rican children's academic achievement shows a reversal, in one respect, of the dominant trend in previous studies dealing with this subject. It will be recalled that in the majority of studies concerned with bilingualism, the bilinguals show a deficit over monolinguals in verbal, and a superiority in performance subtest scores on the WISC. Table 9 indicates that for Tester A (see also Tables 10 and 12 in "The Influence of 'Testing Style' on the WISC Performance of Puerto Rican Children") verbal and performance scores of the children in the Home Environment Sample are about equal. The children to whom Tester B administered the WISC, show higher performance than verbal scores, in the "traditional" manner. The similarity in verbal and performance subtest scores of Puerto Rican children tested by Tester A suggests that there is no deficiency in their linguistic development. (See also Interim Final Report, p.41-42.)

Table 9

COMPARISON OF VERBAL AND PERFORMANCE WISC SUBTEST SCORES
(CHILDREN IN HOME ENVIRONMENT SAMPLE)

Tester A	Full Scale	Verbal	Performance
Boys (n-18)	96	97	96
Girls (N-9)	96	96	99
Tester B			
Boys (N-5)	88	84	94
Girls (N-6)	73	73	79

However, the WISC vocabulary test which was used in both Spanish and English as a means of determining the children's bilinguality or monolinguality proved to be non-differentiating. It was felt by Tester A (a Puerto Rican psychologist, bilingual in Spanish and English) that while this test might determine word equivalency, it was not an adequate test for bi- or monolinguality. While it has been translated into Spanish for use in Puerto Rico (not, however, standardized with the Puerto Rican

school-age population), many words in Spanish familiar to native Puerto Rican children were found to be unfamiliar to Puerto Rican children born and reared in the United States.

In view of the Peal and Lambert findings in the Montreal schools, where attitudes toward both cultures in a bicultural community appeared to be differentiating in terms of bilinguality, it is hypothesized that such attitudes may have an even stronger effect in a bicultural community involving a highly dominating culture and language and a minority culture and language. Whereas in Montreal, it may be assumed that many middle class French Canadian children have access to the English culture including social inter-relationships and occupations, the reverse is true in the Spanish-speaking sections of the United States where Spanish speaking persons are largely of working class origin, low educational and occupational achievements and highly discriminated against in numerous ways.

Our home environment interviews suggest intra-familial conflicts on both language usage (English or Spanish) and in other cultural areas. It has been observed by several authors, for example, that black Puerto Rican young people cling to their use of the Spanish language as a means of distinguishing themselves from American Negroes. In our present sample, six children refuse to speak Spanish at home or in school with their peers, despite parental pressure to do so. It was noted, also, that four of the children to whom Tester B administered the WISC, told her that they are unable to speak Spanish, while the director of field work and WISC Tester A knows from personal contact that these children speak Spanish well. What factors in the social situation pertaining to Tester B led these children to deny their linguistic ability in Spanish?

It is also possible that, because of educational procedures on the Island to which their parents were subjected (Anastasi, Anne and De Jesus Cruz. Language development and non-verbal IQ of Puerto Rican preschool children in New York City. Journal of Abnormal and Social Psychology, 48, 1953), and the middle class educational procedures of the dominant and discriminating culture into which they are thrust, that many of the 250,000 school children of New York City Puerto Rican parents are deficient in either Spanish, English or both.* That these deficiencies may be psychosocial rather than purely linguistic is suggested by the success achieved

* In a re-analysis of WISC data of the Puerto Rican school-age children (N-126), their patterns of intellectual functioning will be examined by methods presented by Belmont, Lillian and Herbert Birch in: The intellectual profile of retarded readers. Perceptual and Motor Skills. Monograph Supplement, 6-V22. Such an analysis could be related to monolinguality and bilinguality determined by standardized tests.

by selected elementary schools in San Antonio, Texas where part of the school curriculum has been presented bilingually for five years. On the basis of this Texas program, the New York City Board of Education has decided to embark upon a similar bilingual curricular program in New York City. By teaching in both languages, not only is the child's linguistic proficiency apparently improved in both, but his native culture and its linguistic system is given public recognition and cultural validity.

6. Influence of Examiner "Testing Style" on the WISC Performance of Puerto Rican Children

The present report is concerned with the influence of examiner's "testing style" on WISC performance. The results were obtained in the course of a study on the determinants of retardation in the intellectual development of lower-class Puerto Rican children in New York City. The primary objectives of the study are: (1) To identify the experientially determined patterns of behavior intellectual functioning that have a detrimental effect on optimal intellectual development; (2) To identify the intrafamilial and extrafamilial influences that contribute to non-optimal growth; (3) To determine the influence of bilinguality on intellectual functioning. A population of 72 Puerto Rican families with 258 children comprised the study sample. One group of 95 children from these families has been studied longitudinally from early infancy. A second group consisting of 150 of the school age siblings of the children in the longitudinal sample has also been studied intensively. The data obtained from administering the WISC to this latter group is the focus of the present report.

In order to increase the probability of getting a valid estimate of the subjects' intellectual functioning, the examiners were matched for sex, ethnicity, bilingualism and experience. Consequently, the testing was carried out by two female psychologists, both of whom were fluent in Spanish and English and had equivalent experience in administering and scoring the WISC. However, in spite of the initial precautions taken to reduce the operation of examiner influence, we observed consistent differences in the scores of the samples tested by each examiner. At first, we attempted to account for the difference in terms of possible errors in the administering and scoring of the WISC. In addition, we also considered the possibility that we had inadvertently introduced a sampling bias in assigning the subjects to each of the examiners. An independent check of the records ruled out administration and scoring of the WISC as a possible explanation for the difference. Moreover comparisons between the samples with regard to ordinal position, family size and behavior problem cases also proved to be negative. The elimination of these potential sources of systematic error indicated that the results warranted further consideration. In addition, matching our testers on such relevant "E" effect variables as sex, ethnicity and experience ruled them out as sources of variance between examiners. Primarily because of this we turned our attention to the possibility that the variance between examiners arose from different "testing styles."

The role that "testing style" may play in creating examiner differences has not as yet been systematically explored. It is in fact difficult to find in the current literature a relatively precise working definition of the concept. However the traditional role of "establishing rapport" with the subject before the test is administered, suggests that one facet of "testing style" may be reflected in how and to what degree the examiner succeeds in creating a "facilitating atmosphere," an

atmosphere in which the subject is responsive to the demands of the test and is able to function optimally. Sacks' (1952) early study on experimentally establishing "a good relationship" (showing interest, playing with, talking with the children) and "a poor relationship" (remaining aloof, did not assist) is one of the few attempts to identify the relevant features of the concept of rapport. A second facet of "testing style" is suggested by the recent work of Katz (1968) and Rosenhan (1967) on the role of examiner approval and disapproval on the functioning of lower class children. The way in which the examiner responds to the child's efforts to cope with the demands of the test can critically influence his level of motivation. Zigler and Butterfield (1968) have recently devised optimizing test procedures that serve to "heighten the children's motivation to respond correctly to the intelligence test items... It is this facet of "testing style" that is particularly critical in testing children from lower-class backgrounds."

In the current report we have adopted this "two-facet" working definition of testing style. How did our examiners "establish rapport" with the children? What are the recurrent stylistic features of the examiner's mode of responding to variations in how the child meets the demands of the testing situation?

The procedure involved in this study phase is described in the Interim Final Report, pp. 15-16.

RESULTS

The presentation of the results is divided into two sections: (1) A quantitative section dealing with the extent and reliability of the observed examiner effects on WISC performance and (2) A qualitative section concerned with identifying differences in the "testing style" of our examiners.

Quantitative data: "E" effect

The mean IQ values for tester "A's" and tester"B's" samples are given in Table 10. All of the mean IQ scores for subjects in "A's" sample fall within the average range. However the means of "B's" sample fall within or below the dull normal range. The extent of these differences in the two samples is more fully reflected in Table 11. Inspection of the data in Table 11 indicates that 86% of "B's" sample range from the dull normal to mentally defective levels. The distribution of "A's" sample is substantially different; only 23% of the subjects fall within or below the dull normal level. In addition 65% of her sample are at the average level.

In order to identify the specific areas contributing to the overall differences noted above, we compared the mean Scaled Scores of the samples. The results of these comparisons are presented in Table 12.

All the mean subtest scores of "A's" sample are significantly greater than those of "B's" sample. The greatest absolute differences in mean scores were found on the Vocabulary, Comprehension and Similarities subtests. Undoubtedly the most striking features of the data in Table 12 are the across the board nature of the differences and the consistency of their direction.

In order to check the reliability of the above trends each examiner retested a randomly selected group from the other's sample. Table 13 shows the mean IQ values of the retest samples. The data in Table 13 indicate that (1) The mean values are very close to those obtained with the original samples and (2) The rank order of the IQ means remained the same for both examiners. Moreover, an examination of the individual records revealed that "A's" retest group had a range of score increments from 4 to 25 points with a mean increment of 12 points on the Verbal Scale, and a range of 11-31 points with a mean of 18 on the Performance Scale. The subjects in "B's" group showed decrements ranging from -3 to -34 with a mean of -20 on the Verbal Scale. The trend on the Performance scale is in the same direction; decrement ranging from -1 to -24 and a mean of -11 points. In addition all of the subjects retested by "A gained points on both the Verbal and Performance Scales, while those retested by "B" lost points on both scales.

Table 14 shows the mean subtest scores for the retest samples. Three features of these data are especially noteworthy: (1) The largest mean differences were found for Vocabulary, Comprehension and Similarities. This replicates the results presented in Table 12; (2) The verbal mean subtest scores of the subjects retested by "A" were significantly greater than those of group retested by "B"; (3) The Object Assembly subtest was the only performance test that showed a significant difference between the retest groups; (4) The means for all subtests of "A's" group were higher than those of "B's" group. This finding is consonant with those presented in Table 13.

Qualitative data: Differences in "testing style"

The data relevant for a delineation of differences in the "testing style" of examiners "A" and "B" were drawn from three sources: (1) The impressions of the way in which "A" and "B" interact with others (children and adults) formed by members of the research team; (2) A detailed analysis of the verbatim records kept by both examiners of the subjects' responses and their remarks; (3) An interview with each examiner focussed on issues related to "testing style."

Differences in "style" of establishing rapport

"A's" manner of establishing rapport can be generally characterized as a process of immersing herself in the child's life space. She did not ritualize the pretest activities. She spent considerable time talking to the children - describing objects, answering questions etc.

The exploration of the testing situation was conducted as if it were some sort of game. Her way of responding to the children was animated, interested and focussed on their needs. "B's" approach has been described by an observer as being: (1) reserved and quiet; (2) confined to doing what is generally considered necessary to establish rapport; (3) formal in introducing the child to the situation and in answering his questions. She describes her pretest activity in a highly ritualized manner. First, she asks children about their language preference. Secondly she asks them to talk about themselves. She found that many children experienced difficulty in responding to the question. And finally, if they ask questions, i.e., about the room, she willingly answers their questions.

The differences in the "styles" of "A" and "B" in making initial contact and establishing rapport with the children are marked. "A's" style would appear to reduce the distance between herself and the child - creating a state of reciprocal accessibility without destroying the structure and purpose of the testing situation. The decidedly more formal "style" reflected in "B's" way of establishing rapport appears to be related to her wish to seem friendly but also to create in the child the attitude -at the outset- that testing is a serious affair. In keeping with this goal she tries to maintain a serious demeanor.

Comparison of the Dialogues Between the Children and Testers

A detailed appraisal and comparison of the exchanges between the children and the psychologists noted that: (1) the length of the responses elicited by A was greater; (2) the number of "I don't know" responses were much higher for B; (3) when children hesitated in attempting an answer, B did not persist with the question; and (4) the linguistic flexibility, i.e., the switching from Spanish to English and vice-versa - was much more pronounced in the testing done by A. These four areas of differences were considered important in explaining the dissimilar scores obtained by A and B, and all of them are related to what can be described as the "rapport" or "tester's effect."

The relevance of the length of the responses seems obvious. As the child talks more, he helps himself in persisting in the search for a solution and in defining ways to approach it. It was frequent for children examined by A to find a correct response after one or two tries not altogether satisfactory. Conversely, the "I don't know" replies obtained by B seemed to put an end to the efforts to comply with the test's demand before reaching the limit of the child's ability. For this limit to be reached, the child has to be encouraged to do his best; the examiner's smile or silence, the "try again" support, or the sensing of expectancy of a better performance, may quite markedly change the final scoring.

The incidence of the "tester's effect" varies, of course, according to the nature of each test. The two WISC sub-tests for which the greatest differences were found in the scores for the retardation study

are a clear example of those situations which require the examiner's total attention and awareness. The "I don't know" answer is a very important one when dealing with children. It can have different meanings. While it may be an accurate appraisal of his own knowledge, very often it may mean "this is school stuff and I'm bad at that and I better not try". It can also imply "I used to know but I don't remember things too well". He may also be saying, "This is the fastest way of getting out of the whole thing".

In the example being considered, it was evident that B never challenged the child's "I don't know" replies. On the contrary, whenever the children said "I don't know", A encouraged them to persist, often eliciting an answer and usually a satisfactory one. In saying that A challenged the quitting "I don't know", it is indispensable to point out that this was not done in a routine manner. It was always addressed to that particular child, with the recourses and the nuances of meaning that the psychologist considered the best for that unique situation. The same approach was fruitful in the case of the hesitations, the groping for a solution, which for many of the questions brought the child to a region in which the temptation not to persist in his efforts were not helped by routine administration of the standard test.

The above differences reflect recurrent features of test records. The children examined by "A" frequently were able to give a correct response after one or two unsatisfactory attempts. It was "B's" tendency to accept a "I don't know" response without any further intervention. She felt that: "Encouragement at that time would not bring them closer to the answer...almost an act of cruelty...to encourage would continue the child's embarrassment." Although both testers operated within the boundaries of the rules of standardized procedures, "A's" mode of operating was more responsive and optimizing than "B's". Examiner "B's" "style" was clearly correct according to the rules of testing game but dominated by constraints. She was constrained by her expectation that the subjects would respond negatively if she had been more active in response to their "don't know," hesitations and evasions. She also seemed constrained by her image of herself as a tester. When asked how she would change her mode of administering the test in order to optimize the subject's performance, she indicated that: "She would not change her approach. It would not be me."

Table 10: Mean WISC IQs for tester "A" and tester "B" samples

WISC IQ	Tester "A"*	Tester "B"**	t	p
Full Scale	97.17±11.10	80.47±11.44	7.73	<.001
Verbal Scale	96.51±12.56	79.09±10.16	8.17	<.001
Performance Scale	98.61±12.41	86.09±13.76	4.95	<.001

* N=71
** N=45

Table 11: Proportion of subjects at different IQ levels in examiner "A's" and examiner "B's" samples

Classification	"A"* Per Cent	"B"** Per Cent
Very Superior	0%	0%
Superior	1	0
Bright Normal	10	2
Average	65	15
Dull Normal	18	38
Borderline	4	27
Mental Defective	1	18

* N=71
** N=45

Table 12: Mean WISC subtest scores for tester "A" and tester "B" samples

WISC Subtests	Tester "A"*	Tester "B"**	t	p
Information	7.77±2.21	6.91±2.25	2.00	<.05
Comprehension	10.81±2.74	6.39±1.98	9.95	<.001
Arithmetic	8.59±2.55	7.36±1.93	2.95	<.01
Similarities	11.42±3.52	7.44±2.86	6.62	<.001
Vocabulary	8.41±2.55	3.31±2.14	11.51	<.001
Picture Completion	9.29±2.96	7.73±2.65	2.93	<.01
Picture Arrangement	9.53±2.67	8.40±2.67	2.20	<.05
Block Design	9.71±2.17	8.60±2.80	2.26	<.05
Object Assembly	10.32±2.92	7.98±3.50	3.73	<.001
Coding	10.18±2.85	7.56±2.94	4.70	<.001

* N=71
** N=45

Table 13: Mean WISC IQs for retest sample (N=16)

WISC IQ	Tester "A"	Tester "B"	t	p
Full Scale	96.12±21.06	81.41±19.29	6.94	<.001
Verbal Scale	93.71±20.93	77.94±14.66	5.98	<.001
Performance Scale	99.47±19.27	88.88±21.55	3.15	<.01

Table 14: Mean WISC subtest scores for retest sample (N=16)

WISC Subtests	Tester "A"	Tester "B"	t	p
Information	8.00±3.62	6.47±2.83	3.20	<.01
Comprehension	10.35±3.98	5.94±2.44	6.24	<.001
Arithmetic	8.76±3.34	7.06±1.92	3.04	<.01
Similarities	10.23±4.11	7.00±4.03	3.74	<.01
Vocabulary	7.70±3.80	3.87±3.48	5.81	<.001
Picture Completion	9.65±2.47	8.29±4.73	1.37	N.S.
Picture Arrangement	8.82±3.52	7.82±3.02	1.17	N.S.
Block Design	10.70±3.33	9.53±4.32	1.63	N.S.
Object Assembly	10.06±4.36	7.18±3.74	3.02	<.01
Coding	10.23±3.65	9.18±3.63	1.36	N.S.

REFERENCES

Katz, I., Henchy, T. & Allen, H. Effects of race of tester, approval-disapproval, and need on Negro children's learning. J. Per. Soc. Psychol., 1968,8, 38-42.

Rosenhan, D.L. Effects of social class and race on responsiveness to approval and disapproval. J. Per. Soc. Psychol., 1968, 4, 253-259.

Sacks, E.L. Intelligence scores as a function of experimentally established social relationships between child and examiner. J. abnorm. soc. Psychol., 1952, 47, 354-358.

Zigler, E. & Butterfield, E.C. Motivational aspects of changes in IQ test performance of culturally deprived nursery school children. Child Development, 1968, 39, 1-14.

7. Stability and Change in the Intellectual Level of Puerto Rican and Middle Class Preschool Children

Introduction

The present social scene, for a number of years, has been characterized by the presence of numerous programs of compensatory preschool education, one expressed goal of which is the elevation of the IQ of socially disadvantaged children through a variety of enrichment experiences (Gordon and Wilkerson, 1966). Implicit in many of these programs, and indeed sometimes stated explicitly (Klaus and Gray, 1968) is the view that in the absence of such interventions the environmental circumstances in which the children live will provide insufficient stimulation of a type necessary to maintain IQ at its starting level. It must be recognized that this concern is almost entirely inferential and that the assumption of deterioration in IQ during the preschool years is largely based upon the results of cross sectional rather than longitudinal studies most of which have been concerned with older children (Kennedy, Van de Riei and White, 1963; Haryou, 1964). The findings of lower IQ in cross-sectional samples of older aged school children as contrasted with the IQ scores attained by younger school children has been extrapolated to embrace age levels that in fact have not been extensively studied. Where direct studies have been conducted in preschool children, evidence of deterioration has been at best equivocal. Data obtained by Klaus and Gray (1968) for example on IQ change in two groups of disadvantaged children who were without preschool experience reveals that for one of the groups the mean IQ at 6 years was significantly below the baseline value obtained when the children were four years of age. However, in the other group no significant decline in score was observed between these two ages. Moreover, five years later, and after two years of attendance in a regular school facility, the mean IQ's of both groups of children were insignificantly different from their initial values (Table 15).

Clearly, if we are to understand the problem more fully what is required is detailed longitudinal information with respect to the natural history of IQ change in preschool children from disadvantaged groups, and some understanding of the relation between the longitudinal course of IQ in such groups and in the more advantaged segments of the population. Moreover, if the data deriving from such studies are to be interpreted with any degree of confidence it is essential that the samples of children studied be defined not only in relation to ethnicity and general social circumstances, but with respect to a number of antecdent factors of potential pertinence to intellectual functioning as well. Thus information concerning the occurence of such conditions as prematurity, complications of pregnancy and delivery, neonatal distress, poor antenatal care (Janes, 1961; MacMahon and Sawa, 1961; Birch, 1966; Birch, 1968) all of which have increased prevalence in socially disadvantaged groups (Knobloch and Pasamanick, 1960; Pasamanick and Knobloch, 1958; Birch, 1968) is necessary in order to evaluate whether the children studied are at equivalent risk of

primary central nervous system dysfunction, the presence or absence of which may contribute significantly to the longitudinal course of intellectual development.

The present study addresses itself to this problem by comparing IQ levels at three and at six years of age in Puerto Rican working class and white middle class children. A special opportunity to compare these two groups of children is provided by the fact that we have been conducting parallel longitudinal studies of the behavioral development of both the middle class (Thomas, Chess, Birch, Hertzig and Korn, 1963) and the Puerto Rican working class (Hertzig, Birch, Thomas and Mendez, 1968) children. In the course of these studies both groups of children and their families have been followed from early infancy onward. Consequently, contemporaneously acquired background information is available for all children and can be directly considered. In addition, the middle class and Puerto Rican children derive from groups comparable with respect to family stability. Furthermore, the samples are large enough to permit comparisons of the longitudinal course of IQ change in children who have been matched for level of general intelligence at 3 years of age.

Subjects

The subjects were 60 Puerto Rican children (27 boys and 33 girls) and 116 middle class children (58 boys and 58 girls) who were examined at 3 years of age. Of these 57 Puerto Rican and 110 middle class children were available for re-examination at 6 years of age (Table 16). In neither group did the children last to follow-up differ in any significant respects from the remainder.

Both groups of children have been described in detail in the Interim Final Report, December, 1967 (Grant No. (New) 5-0359-4111-3).

Procedure

Intellectual level was estimated for the children in both samples between the ages of three and four, and five and six as a regular part of the longitudinal studies in which they were subjects. In all cases the examination used was the Stanford-Binet, Form L. The standard test procedure was followed and carried out identically for both groups of children at both age levels with the following exceptions. The middle class children were examined by one of two psychologists, each of whom administered an equal number of tests. The Puerto Rican children were all examined by a third individual who was a bilingual Puerto Rican psychologist. The Puerto Rican children were tested in either Spanish or English. This selection was made by the psychologist on the basis of her estimate of the language in which the child possessed the greatest competence. At three years of age there were 43 children tested entirely in Spanish, two in Spanish and English and 15 in English. At six years, eight children were tested entirely in Spanish, 14 in Spanish and English and 35 in English. Rapport

between the psychologist and the children was especially good in that fully one half of the middle class and all of the Puerto Rican children were well acquainted with the respective examiners as a consequence of other phases of the longitudinal studies. Nevertheless a certain number of children in each group were sufficiently uncooperative to make fully psychological testing impossible. At three years of age 17 of the middle class and 12 of the Puerto Rican children could not have their IQ's determined. The proportion of these cases was not significantly different in the two groups ($_x2$=.53,1 df; p>.50). At six years of age none of the middle class but two of the Puerto Rican children failed to attain an IQ score (Table 17).

Discussion

The findings of this study of IQ change between three and six years in the middle class and Puerto Rican working class children may be summarized as follows:

I. Overall intellectual level tends to remain fairly stable during this time period in both groups of children. Small increases of under 5 points were observed in the Puerto Rican as well as in the middle class groups when they were considered as a whole.

II. When the analysis was restricted to include only those children whose scores at three years of age were between 90 and 110 it was found that in the Puerto Rican group those children whose initial scores were in the normal range showed a modest rise in score which although statistically significant was functionally insignificant. The middle class children with comparable initial scores increased in performance level such that over two thirds of them were functioning in the superior intellectual range at six years.

III. IQ change was also differently related to initial IQ level in the two groups. Among the Puerto Rican children those whose initial scores fell below 90 and those whose initial scores were in the 90 to 110 range had increases in score which were of comparable magnitude. In the middle class group, however, the increase in mean IQ between three and six years was significantly greater for those children whose initial scores were between 90 and 110, than for those children who at three years of age attained IQ's which were 111 or above.

IV. Failure to achieve an IQ score at three years of age because of uncooperativeness had differential significance in the socially defined groups. The middle class children who were untestable at three years attained scores which were undistinguishable from the remainder of the group at the later testing date. In contrast, the mean IQ of the Puerto Rican children who were untestable at the time of the first examination was significantly lower than that attained

by the remainder of the group at six years of age.

V. Boys contributed to the rise in IQ between three and six years more heavily than did girls in both of the socially defined groups. Ordinal position bore no relation to IQ level or IQ change in the Puerto Rican children.

The findings of stability in IQ over time in children who derive from both working class and middle class backgrounds are in accord with the results of a number of earlier investigations. Shuttleworth (1940) in reporting on the longitudinal course of intellectual development in boys between the ages of 8 and 18 found that little change in mean IQ score occurred during this time period in either those children who derived from professional and managerial backgrounds or were of working class origin. More directly pertinent to the present study, however, are the findings of Goodenough and Maurer (1940) who report increases in IQ of between 3 and 7 points in both children of upper and lower socio-economic status during the preschool period. These workers also examined the relation of nursery school attendance to IQ change during the preschool period and present data indicating that small increases in mean IQ score of between four and five points occurred in the children studied over a three year period whether or not they had attended nursery school. Wellman (1940) too, has studied the question of IQ change during the preschool period and has reported a ten point increase in mean IQ score in 67 middle and upper middle class children who attended nursery school for three years. Further analysis of the data indicated, as in the present study, that the greatest gains were made by children whose initial scores were in the normal range. The gains of children who initially were functioning at a superior level were correspondingly less. In contrast, no significant increase in mean IQ score was found in those children who did not attend preschool.

The data of the present study make it impossible to systematically evaluate the role of nursery school attendance as all of the middle class children experienced at least one year of preschool and all but ten attended nursery school for a three year period. The patterns of IQ change in these children, however, are very similar to those described by Wellman (1940) for children of similar social background. None of the Puerto Rican children had more than one year of school attendance prior to entrance into the first grade. Twenty five of the Puerto Rican children though, did attend kindergarten. The mean IQ of the kindergarten children was somewhat higher than that of the remainder of the group at three years. By six years, however, the mean IQ scores of the two groups was insignificantly different. Thus, paradoxically, a greater mean gain between three and six years was made by the children who were without kindergarten experience (Table 26).

It should be noted, however, that the most striking effects of preschool experience on intelligence have been observed in institutionalized children. In such children, many of whom are functioning initially as mentally defectives, a steady decline in intellectual level can be anticipated with increasing age. The reversal of this trend in young children after exposure to nursery school experience has been reported by a number of investigators. (Kephart, 1940; Wellman, 1940; Skeels, Updegraff, Wellman and Williams, 1938). In these cases the issue appears to involve, at least in part, the reversal of psychopathological reactions to markedly unstimulating and deprived institutional environments. The lower class disadvantaged child living in the community, no matter how different his life style may be from that of more advantageously situation children, is nevertheless exposed to an environment the experiential richness of which is far greater than that characteristic of orphanages and other child-caring institutions during the thirities and forties. Under such circumstances, as in the present study deterioration in intellectual performance with age does not occur even in the absence of opportunities for enrichment.

The lack of deterioration in this group of socially disadvantaged and unenriched children raises serious questions as to the utility of IQ as a measure of the effectiveness of programs of preschool programs of compensatory education. If gains in IQ occur between three and six years in disadvantaged children without the benefit of Headstart or other programmatic experience which overall is comparable to those made by middle class children who have attended nursery school it seems most unwise to expect that greater gains will occur after exposure to enrichment curricula. In fact in many intervention programs there has been just such a failure to demonstrate a significant rise in IQ. Nevertheless, failure to alter IQ need not necessarily be interpreted as has Jenson (1968) for example, as evidence that Headstart and other types of early intervention programs are ineffective in providing experiences which will contribute to greater educational achievement during the school years. What is suggested, rather, is that the use of other indices of behavior and behavioral competence pertinent to school learning may provide more sensitive measures of the import of compensatory education on preschool children from disadvantaged backgrounds than IQ.

Table 15: IQ Change in Two Groups of Disadvantaged Children Who Were Without Preschool Experience. (Adapted from Klaus and Gray, 1968)

Date of testing	School Experience	N=18		B=24	
		CA	IQ	CA	IQ
May 1962	None	4 years	85.4	4 years	86.9
May 1963	None	5 years	89.6	5 years	87.4
August 1964	None	6 years	82.9	6 years	80.8
August 1965	1 yr. regular school	7 years	91.4	7 years	89.4
June 1966	2 yrs. regular school	8 years	87.9	8 years	84.8

Table 16: Age and Sex Characteristics of the Puerto Rican and Middle Class Children Studied at 3 and At 6 Years of Age

	Puerto Rican					Middle Class				
	N			Age		N			Age	
	M	F	T	Mean	SD	M	F	T	Mean	SD
3 yrs.	27	33	60	3 yrs.6 mo.	2.54	58	58	116	3 yrs.4 mo.	2.47 mo.
6 yrs.	26	31	57	6 yrs.4 mo.	3.68 mo.	53	57	110	6 yrs.1 mo.	3.01

Table 17: Comparison Groups of Middle Class and Puerto Rican Children at 3 and at 6 years of age

3 years	6 years	MC			PR		
		M	F	T	M	F	T
IQ score	IQ score	46	48	94	20	25	45
IQ score	No IQ score	0	0	0	1	0	1
IQ score	Lost to follow-up	4	1	5	0	2	2
No score	IQ score	7	9	16	5	5	10
No score	No score	0	0	0	0	1	1
No score	Lost to follow-up	1	0	1	1	0	1
		58	58	116	27	33	60

Table 18: Mean IQ Scores at 3 and at 6 Years in Middle Class and Puerto Rican Working Class Children

	IQ 3 years		IQ 6 years			
	M	SD	M	SD	t	p
Middle Class (N=94)	122.47	16.57	127.22	13.53	2.15	$<.05$
Puerto Rican (N=45)	95.62	10.80	100.15	13.57	1.75	$<.10$

Table 19: Correlation Between IQ Scores at 3 and at 6 Years In Middle Class and Puerto Rican Working Class Children

	r(3-6)	df	p
Middle Class	0.660	92	<0.01
Puerto Rican	0.706	43	$<.001$

Table 20: IQ Distribution in Middle Class and Puerto Rican Children at 3 and 6 Years

IQ	Middle Class				Puerto Rican			
	3 years		6 years		3 years		6 years	
	N	%	N	%	N	%	N	%
Below 90	3	3.19	0	0	11	24.44	7	15.56
90-110	19	20.21	11	11.70	30	66.67	32	71.11
Above 110	72	76.59	83	88.30	4	8.89	6	13.33
Total	94	99.99	94	100.00	45	100.00	45	100.00

Table 21: Mean IQ's at 3 and 6 Years of Middle Class and Puerto Rican Children Whose Scores at 3 Years Were Between 90 and 110

	IQ 3 years		IQ 6 years			
	M	SD	M	SD	t	p
Middle Class (N=19)	102.84	6.64	115.00	12.49	*3.25	$<.01$
Puerto Rican (N=30)	97.33	5.49	101.67	10.30	*2.04	$<.05$

* because of a significant difference in the variances the Cochran correction of the t test was used.

Table 22: A Comparison of the Frequencies With Which Middle Class and Puerto Rican Children Whose IQ Scores Were Between 90 and 110 at 3 Years of Age Achieved Scores Above 110 at 6 Years

	Middle Class	Puerto Rican	Total
Above 110 at 6 years	13	4	17
Below 110 at 6 years	6	26	30
Total	19	30	49

Chi ^{2}= 15.536, df=1, p $<.001$

Table 23: Pearson Product Moment Correlations Between IQ Scores at 3 and at 6 Years In Middle Class and Puerto Rican Children Whose Scores at 3 Years Were In The 90-110 Range

	N	r	df	P
Middle Class	19	0.341	17	NS
Puerto Rican	30	o.500	28	<.01

Table 24: Mean IQ Scores at 6 Years Attained By Children Who Were Testable and Untestable at 3 Years of Age

Group	Untestable at 3; IQ at 6			Testable at 3; IQ at 6				
	N	M	SD	N	M	SD	t	p
Middle Class	16	122.12	11.79	94	127.22	13.56	1.56	NS
Puerto Rican	11	87.70	10.98	45	100.15	13.57	3.21	<01

Table 25: Sex Differences in IQ in MC & PR Children

Puerto Rican

Sex	Age	N	M	SD	Sex	Age	N	M	SD	t	p
Boys	3	20	94.45	9.67	Girls	3	25	96.56	11.75	0.660	NS
Boys	6	20	102.80	16.62	Girls	6	25	98.04	10.43	*1.117	NS
Boys	3	20	94.45	9.67	Boys	6	20	102.80	16.62	*1.943	<05
Girls	3	25	96.56	11.75	Girls	6	25	98.04	10.43	0.471	NS

Middle Class

Sex	Age	N	M	SD	Sex	Age	N	M	SD	t	p
Boys	3	46	120.93	16.04	Girls	3	48	123.96	17.11	0.886	NS
Boys	6	46	129.78	13.30	Girls	6	48	124.77	13.43	1.817	<.05
Boys	3	46	120.93	16.04	Boys	6	46	129.78	13.30	*2.880	<01
Girls	3	48	123.96	17.11	Girls	6	48	124.77	13.43	0.258	NS

* Because of a significant difference in the variances the Cochran correction of the t test was used.

Table 26: IQ Scores at 3 and 6 Years In Puerto Rican Children Who Have and Have Not Attended Kindergarten

	Kingergarten			No Kindergarten				
	N	M	SD	N	M	SD	t	p
3 years	24	98.38	10.82	22	92.59	9.43	1.867	<.10
6 years	24	101.42	14.25	22	98.81	11.96	0.652	NS
	t	0.800		t	1.968			
	p	WS		p	<.10			

REFERENCES

Birch, Herbert G. Health and the education of socially disadvantaged children. Developmental Medicine on Child Neurology. 10, 1968.

Cravioto, J., E. R. De Licardie, and H. G. Birch. Nutrition, growth and neuro-integrative development: an experimental and ecologic study. Pediatrics, 38, 1966.

Goodenough, F. L. and K. M. Maurer. The mental development of nursery school children compared with that of non-nursery school children. Thirty-Ninth Yearbook of the National Society for the Study of Education. Bloomington, Illinois. 1940.

Gordon, E. W. and D. A. Wilkerson. Compensatory Education for the Disadvantaged. New York: College Entrance Examination Board, 1966.

Haryou, Inc. Youth in the ghetto: a study of the consequences of powerlessness and a blueprint for change. New York: Haryou, 1964.

James, G. The epidemiology of mental disorder associated with damage to the brain after birth. M. E. Gruenberg (Ed.), Causes of Mental Disorders: A Review of Epidemiological Knowledge. New York: Milbank Memorial Fund, 1961.

Jensen, Arthur R. How much can we boost I.Q. and scholastic achievement? Harvard Educational Review, 39, 1969.

Kephant, N. C. Influencing the rate of mental growth in retarded children through environmental stimulation. Thirty-Ninth Yearbook of the National Society for the Study of Education. Bloomington, Illinois. 1940.

Kennedy, W.A., V. Van de Riet and J.C. White. A normative sample of intelligence and achievement of Negro elementary school children in the southeastern United States. Child Development, 28, 1963.

Klaus, R.A., and S.W. Gray. An experimental preschool program for culturally deprived children. Child Development, 36, 1965.

Knobloch, Hilda and B. Pasamanick. Environmental factors affecting human development before and after birth. Pediatrics, 26, 1960.

MacMahon, B., and J.M. Sawa. Physical damage to the foetus. In E. Gruenberg (Ed.) Causes of Mental Disorders: A Review of Epidemiological Knowledge. New York: Milbank Fund, 1961.

Pasamanick, B. and Hilda Knobloch. The contribution of some organic factors to school retardation in Negro children. Journal of Negro Education, 27, 1958.

Shuttleworth, F.K. The cumulative influence on intelligence of socio-economic differentials operating on the same children over a period of ten years. Thirty-Ninth Yearbook of the National Society for the Study of Education. Bloomington, Illinois. 1940.

Wellman, Beth. Iowa studies on the effects of schooling. Thirty-Ninth Yearbook of the National Society for the Study of Education. Bloomington, Illinois. 1940.

IV. CONCLUSIONS

1) As stated in the Interim Final Report, this population of Puerto Rican children is retarded in reading comprehension as indicated by Metropolitan Achievement Test scores. This is a finding regarding disadvantaged children noted by other workers in the field.

2) Our analysis of the home environment, which is still ongoing, shows no consistent relationship between parental child care practices or educational attitudes and the children's reading deficits. There may be some relationship between the level of intellectuality in the home and the children's reading abilities, but further analysis of the data is required in order to present definitive findings. The fact that among the 73 children who attain IQ scores (WISC and WAIS) of 90 and above there are many with reading deficits suggests that these deficits occur as a result of factors outside the home. The reading deficits occur in spite of many positive factors in the home environment: concern of the parents with the children's achievement; involvement in and knowledge of their educational activities and status; pressure on the children to achieve as a means of realizing higher occupational goals; independence training; and a concern with task performance and completion. The data suggest that the educational problems of the children must be examined within the framework of the schooling they receive. While the reading deficits which occur may be complicated by the children's bilingual background, we find no evidence of inadequate language development. Further testing is required to determine language deficiencies.

3) The results of our investigations of home environment add significantly to the growing body of studies which reveal intra-class variability. Whereas it has been common for the past decade to attribute certain child care practices and educational attitudes to "lower class" or "working class" groups, it is increasingly apparent that heterogeneity rather than homogeneity characterizes class groupings. (Chess, Stella. Disadvantages of 'the disadvantaged child.' American Journal of Orthopsychiatry, 39, 1969. Also, Caldwell, Bettye. Social class level and stimulation potential of the home. Seattle, Washington: Special Child Publications. 1967.) While the present group of Puerto Rican working class parents shares with other working class groups a low economic, educational and occupational level, the child care practices and educational attitudes of the Puerto Rican parents differ significantly from those economically and educationally deprived parents described by such workers as Mattick, Pavenstedt and Wortis, et al.* Our findings thus highlight the need to study the functioning of both children and parents under conditions in which a wide variety of variables in addition to social class are controlled.

*(Mattick, Ilse. Adaptation of nursery school techniques to deprived children: some notes on the experience of teaching children of multiproblem families in a therapeutically-oriented nursery school. Journal of the American Academy of Child Psychiatry. 4:4:1965. Pavenstedt, Eleanor. A comparison of the child-rearing environment of upper-lower and very low-low class families. Presented at the 1964 annual meeting of the American Orthopsychiatric Association. Wortis, H. et al. Child-rearing practices in a low socioeconomic group. Pediatrics, 8, 1963).

4) An analysis of the IQ change between three and six year old working class Puerto Rican and middle class children shows that overall intellectual level tends to remain fairly stable during this time period in both groups of children. Small increases of under five points were observed in both groups when they were considered as a whole. The absence of a decrement in IQ level of the Puerto Rican children indicates that their retarded academic level is not the result of cognitive defects associated with cultural deprivation (deficiencies in the pre-school home environment, etc.). This area of the children's functioning further emphasizes the need to look outside the home for the causes of reading deficits.

5) Differences in examiner testing style have affected the mean scores of two groups of children within the total sample. This suggests the possibility that low IQ associated with children of low economic background may in part result from routine rather than optimal modes of testing. This finding in the present study is in keeping with the reports of other investigators (Zigler, E. and Butterfield, E.C. Motivational aspects of changes in I.Q. test performance of culturally deprived nursery school children, Child Development, 39:1, 1968).